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CONCHOLOGISTS OF AMERICA, INC.

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world. In 1995, COA adopted a conservation resolution: Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.

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In This Issue

Editor's comments --- 3

In memoriam -- 3

Vexatious *Vertigopsis*; the status of *Gastrocopta gracilis* (Sterki, 1890) by Harry G. Lee, John A. Cramer, Lori Schroeder, Bill Frank & Robert E. Winters -------------- 4

Book Review: Living Seashells of the Tropical Indo-Pacific by Andrey Ryanskiy (reviewed by Tom Eichhorst) ------------------------------ 15

More on cowrie sinistrality by Moshe Erlendur Okon ---------------------------------- 16

Shells (fossils) in the news by David Dockery ------------20

Support for COA --- 21

Dealer Directory --- 22

Hydrobiidae (mud snails): a large family of small snails by Simon Aiken & Thomas Eichhorst -------------------- 24

Select components shell show exhibits by John Timmerman -- 28

Conchologists of America Board of Directors (BOD) 2020 Minutes by Amelia Ann Dick ------------------------------ 41

Update on COA 20/20: The Sheller's Family Reunion by Alan Gettleman --- 44

The Old Sheller and Conchylomania by Sam Harris -- 46

Shells Needed for the Oral Auction in Melbourne, Florida by Dave Green, Oral Auction Chairman ----------------- 47

2021 shell shows and related events by Vicky Wall ----- 48

What does COA do for me? by T. Eichhorst ------------ 49

J. B. Sessoms – in memoriam by the Philadelphis Shell Club ----------------------------- 50

Front cover: *Naria boivinii* (Kiener, 1844) (was *Cypraea boivinii*, then *Erosaria boivinii*), 25mm, photographed by Charles Rawlings in Bali. The intricate and wildly colored mantle covering hides a rather common gray shell with variable brown to purple spots. It has an extensive range: from Japan, through the Indo-Pacific, to India. The intricate sculpture and amazing colors of this species are illustrated in "Living Seashells of the Tropical Pacific," (top of page 10). See the book review on page 15.

Back cover: *Architectonica grandiosa* Iredale, 1931, by David Massermin (with permission). David photographs and collects photos from others of New Caledonian mollusks. He sends these out via e-mail to interested parties (I have literally thousands of his photos on file) and periodically includes an Excel database as a catalog. Included in these photos are multiple images of colorful and exotic nudibranchs (most by Yves Thevenet).

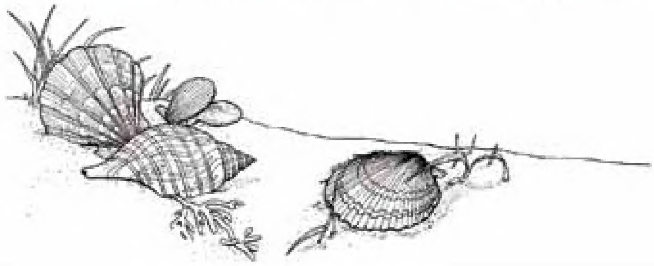
Editor's comments:

This issue seems like a concentration on miniatures with the opening *Gastrocopta* paper by Lee, Cramer, Schroeder, Frank, and Winters; and then the Hydrobiidae centerfold from Simon Aiken. To help round things out, however, we have a bit more on cowrie sinistrality by Moshe Okon and a shell show mentoring session from John Timmerman. On the COA business side we have the minutes from the 2019 COA Board, presented electronically to the board in 2020 by Amelia Ann Dick. We also have a couple of interest pieces like "Shells (fossils) in the news" by David Dockery and a recipe for "The Old Sheller." Importantly, Alan Gettleman reminds us of the upcoming Melbourne COA Convention. Canceled once due to the Coronavirus pandemic, it is on track for 2021. The Hilton is well-versed on covid protocols and ready for COA this summer.

On that same subject, **Dave Green desperately needs quality oral auction material** (see page 47). I looked around and found I have more than seven (five shown here) large tubs of nerites plus several five kilogram bags I could send him, but Dave is a nice guy and nobody deserves abuse of that kind. So please look around and see if you can't spare one of those large pricey show pieces. If nothing else, it'll make room for some smaller material from one of the silent auctions! And speaking of silent auctions, John and Cheryl Jacobs have gathered together quite a trove of quality silent auction material. If you miss Melbourne COA, you will miss an opportunity to dig through a number of donated collections.

In memoriam:

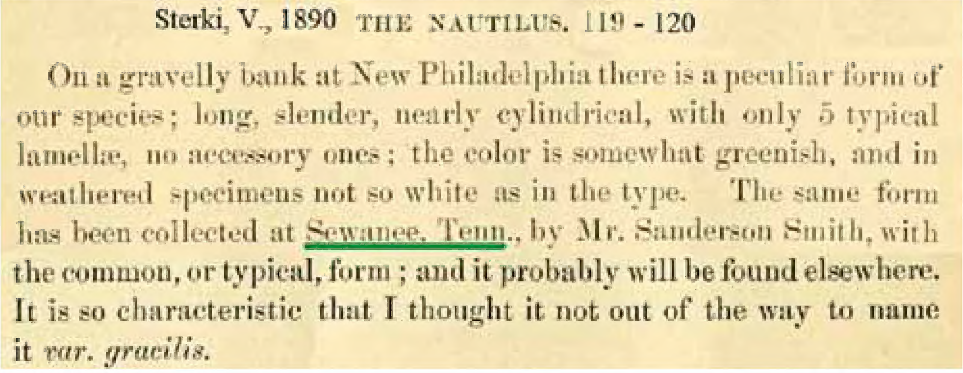
Junius Bradley Sessoms III (pg. 50)



Vexatious *Vertigopsis*; the status of *Gastrocopta gracilis* (Sterki, 1890)

Harry G. Lee, John A. Cramer, Lori Schroeder, Bill Frank & Robert E. Winters

The collection of generous samples of riverine drift has been shown to provide a rich land snail harvest, often high in quality and usually plentiful in both species and specimens. Such collections in the drainage of the Paint Rock River (PRR) in NE Alabama, were shown to be exemplary in species richness (Lee & Winters, 2016). Another benefit of such large harvests, the large numbers of specimens of individual or closely-related species brings us to the topic of our report. **Fig. 1** depicts a shell we culled from drift collected by one of us (REW) on 17 March 2015, on the floodplain of Estill Fork, 1 mile north of Estillfork, Jackson Co., AL. It is 1.87 mm in height and although identified as *Gastrocopta pentodon* in Lee & Winters (*Idem*: 21, fig. 6), the fact is, it conforms far better to the description of ***Pupa curvidens*** **var. *gracilis* Sterki, 1890**:



Sterki, V., 1890 THE NAUTILUS. 119 - 120

On a gravelly bank at New Philadelphia there is a peculiar form of our species; long, slender, nearly cylindrical, with only 5 typical lamellæ, no accessory ones; the color is somewhat greenish, and in weathered specimens not so white as in the type. The same form has been collected at Sewanee, Tenn., by Mr. Sanderson Smith, with the common, or typical, form; and it probably will be found elsewhere. It is so characteristic that I thought it not out of the way to name it *var. gracilis.*

Although the type locality is in OH, specific mention of Sewanee, TN, is of relevance to us since that college town is roughly 23 miles from the Estill Fork station as the crow flies, and much of its county (Franklin) is in the drainage of that watercourse.

Well then, what gives with the Sterki taxon and *Gastrocopta pentodon* (Say 1822), arguably the most widely distributed of its two dozen congeners in North America (Pilsbry, 1948: 888)? Firstly, they're both placed in the subgenus *Vertigopsis* Sterki, 1893, based on the simplicity of the parietal tooth, resembling that of the genus *Vertigo* (where Thomas Say placed his species originally), in contrast to that of the other North American subgeneric units depicted in **Fig. 2**. As you'll soon see, the .original monotype, *Pupa curvidens* A. Gould, 1841, is now treated as a junior synonym of *G. pentodon*, and the only other presently recognized eastern U.S. *Vertigopsis* is *Pupa tappaniana* C.B. Adams, 1841.[1,2]

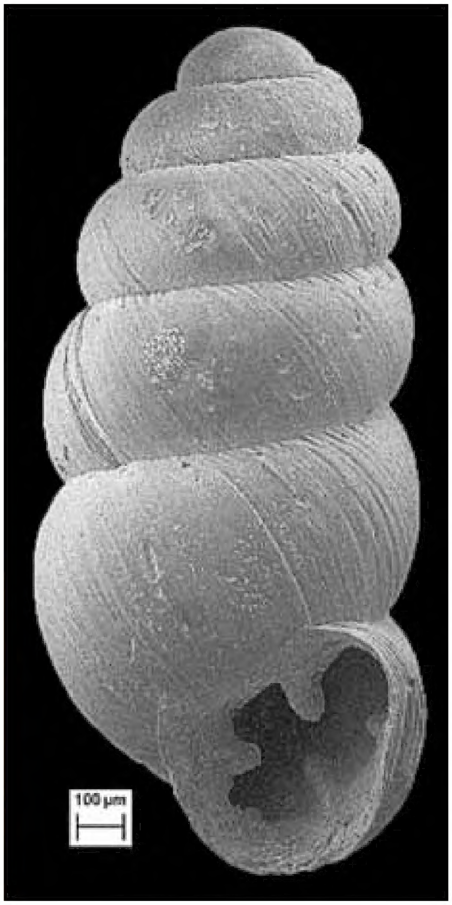


Fig. 1 depicts a shell culled from drift on the floodplain of Estill Fork, 1 mile north of Estillfork, Jackson Co., AL. Although identified as *Gastrocopta pentodon* (Say, 1821) in Lee & Winters (2016: 21, fig. 6), it conforms far better to the description of *Pupa curvidens* var. *gracilis* Sterki, 1890.

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[1] The nearly universal citation of 1842, as the date of this description is incorrect. Charles Baker Adams independently (and obscurely) published the description of this species [see <http://www.jaxshells.org/gastro1.htm>] on Feb. 22, 1841 (Johnson & Boss, 1972: 215). The text was repeated verbatim in Adams (1842: 158). It may be that the author was in a bit of a rush to get this work circulated before an expected *Pupa* monograph (Gould, 1843).

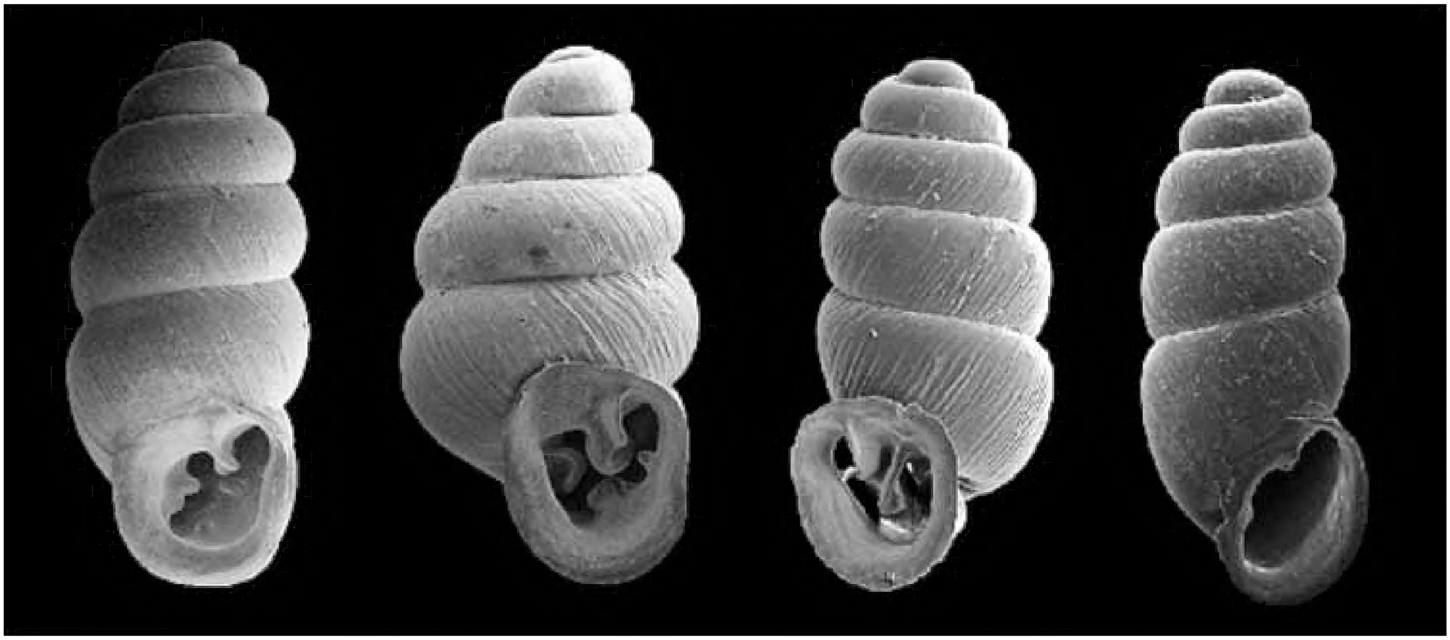


Fig. 2 (L to R): Representatives of the other U.S. *Gastrocopta* subgenera: *G.* (*Gastrocopta*) *procera* (Gould, 1840), *G.* (*Albinula*) *contracta* (Say, 1822), *G.* (*Immersidens*) *perversa* (Sterki, 1898), *G.* (*Privatula*) *corticaria* (Say, 1817).

Vanatta & Pilsbry (1906) compared all eastern U.S. taxa referable to *Vertigopsis*, supplemented by 39 camera lucida drawings. The authors were able to distinguish *Bifidaria pentodon* from *B. tappaniana* but synonymized *B. curvidens* (essentially those forms with supernumerary apertural denticles) and our Sterki taxon with the former. Subsequent workers, e.g., Pilsbry (1916: 28; 1948: 856), Hubricht (1985: 9), have explicitly or tacitly, e.g., Turgeon, Quinn, *et al.* (1998: 137), Nekola & Coles (2010), supported this synonymy.

The above work notwithstanding, the ensuing century generated sufficient uncertainty over the distinction between *G. pentodon* and *G. tappaniana* to impel Pearce *et al.* (2007) to apply extensive morphometric comparisons and sophisticated statistical methods to ultimately validate distinction of the two in collections made on the Delmarva Peninsula. Perhaps for zoogeographic reasons, our Sterki taxon was not placed in consideration.

On the other hand, despite its century-long submersion into synonymy, rather recently it became apparent to us that our PRR drift contained several other specimens beside that in **Fig. 1.** Like it, these shells also looked much more like Sterki's taxon than typical *G. pentodon*, and it was no more difficult to separate the two than either from *G. tappaniana*. We authors decided we should take a page from Pearce *et al.* (2007) to clarify the situation.

---

[2] A detailed historic presentation on the typology of *G. tappaniana* is posted at <http://www.jaxshells.org/gastro1.htm>, and the lectotype is shown at <https://www.biodiversitylibrary.org/page/4314158>. Type material was sought for *G. pentodon* in the collections database of the Academy of Natural Sciences (ANSP) of Drexel University, Philadelphia <http://clade.ansp.org/malacology/collections/search.php>, where 410 lots are recorded, but none is a designated type. Collections Mgr. Paul Callomon confirmed this finding by a search of the collection. Attempts to locate *G. pentodon* var. *gracilis* material at the Carnegie Museum (CMNH), Pittsburgh, were also unsuccessful (database apparently not operational in September, 2020). Although 24 potentially topotypic lots at CMNH collected by Sterki are listed at Invert E Base <https://www.invertebase.org/portal/collections/list.php> at that time, no typologic status was designated for any.

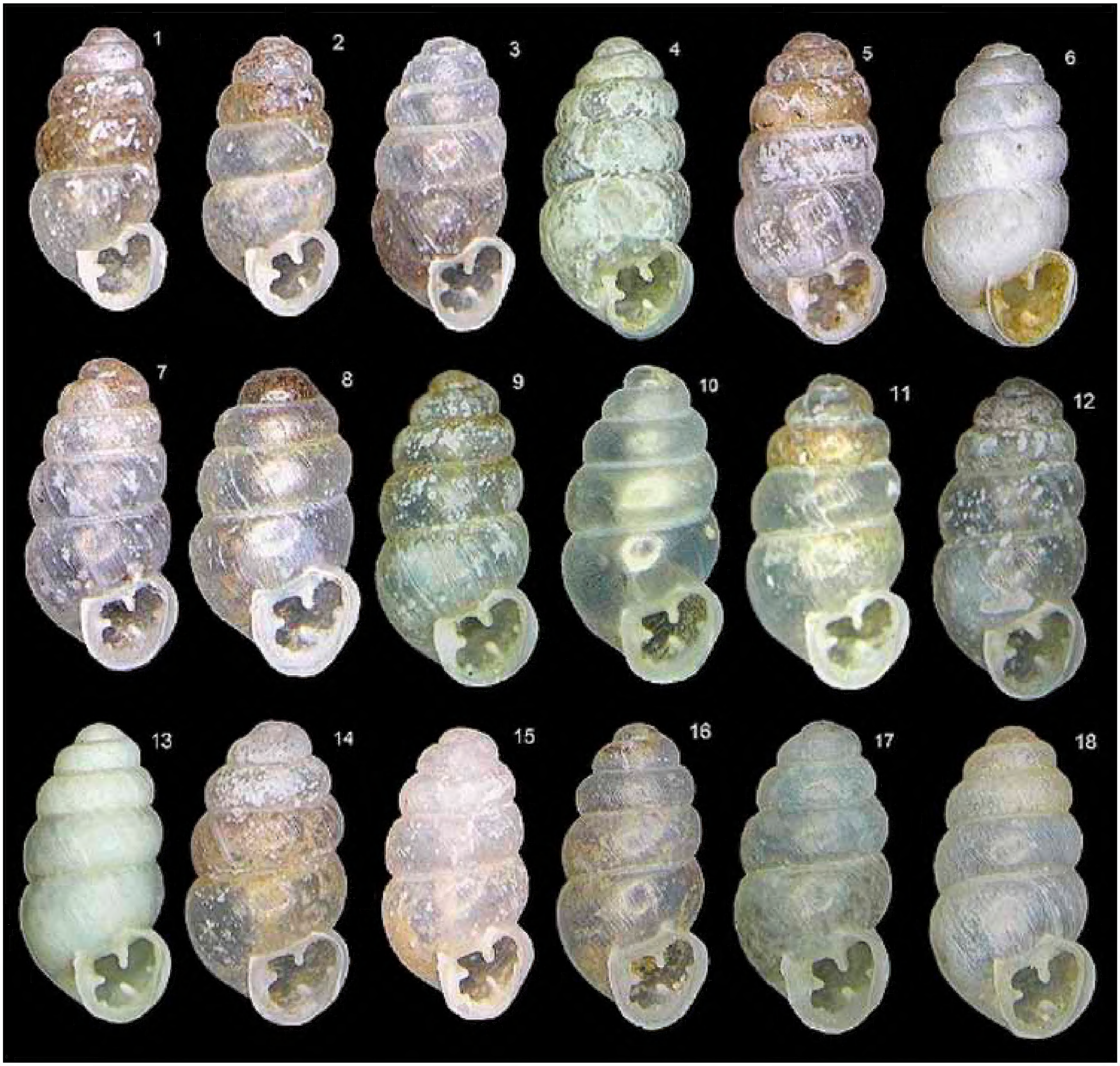


Fig. 3 ***Gastrocopta pentodon* var. *gracilis* (Sterki, 1890), 1.75-2.12 mm (not to scale), drift, Estill Fork (PRR), 1 mile north, Estillfork, Jackson Co., AL.**

Materials & Methods:

It happens that all three morphs are quite common in PRR drift material from several sites. Fortuitously, in a reprise of the station producing **Fig. 1** [now at the Florida Museum of Natural History (FLMNH) as UF512009], REW harvested drift on 3 January 2016, from which HGL culled a few thousand presentable microshells including ~200 *Vertigopsis*. All the latter material was cleansed in commercial hypochlorite solution (HGL) and, after rinsing with tap water and drying, sorted with relative ease into the three taxa, and culled down to three lots of approximately 36 specimens each based on assessment of specimen quality, e.g., integrity and minimal fouling (**Figs. 3-5**). No other bias was applied in this process. The shells were then transmitted to LS for photography.

The shells were examined by LS at 10X through a ST60 trinocular stereomicroscope fabricated in China, bearing no trademark but nonetheless with excellent optics. All shells in the three lots were again high-graded

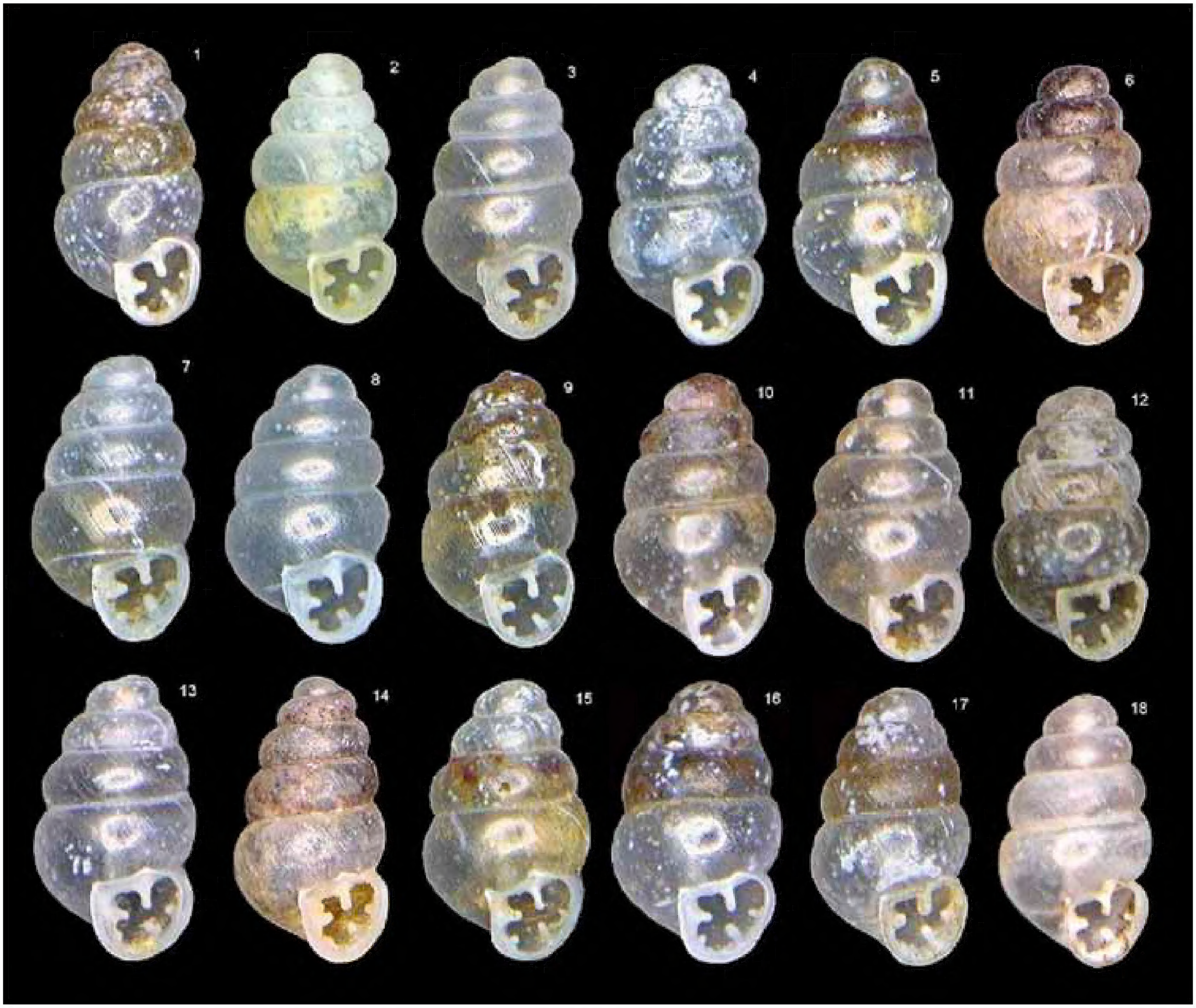


Fig. 4 *Gastrocopta pentodon* (Say, 1821) [typical], 1.53-1.95 mm (not to scale), drift, Estill Fork (PRR), 1 mile north, Estillfork, Jackson Co., AL.

but to more stringent standards than in the initial wash. Closest attention was paid to shell cleanliness, especially of the apertural features, as these were found to play a major role in optimal camera focusing. Shells requiring additional debridement were soaked in commercial laundry bleach (mostly sodium hypochlorite), then commercial three percent hydrogen peroxide, and finally bleach again. Material was rinsed with tap water on removal from each reagent. No bias other than specimen quality was applied in the final selection of eighteen specimens of each taxon.

Generally less than 2 mm, these specimens tested the limits of available equipment. Photographs were taken using the stereomicroscope to which a Nikon 8700 camera was attached through the c-port through a customized adapter which enclosed a 5X lens. Additional magnification was achieved with objective at 1.425X and the 8X zoom lens of the camera. Illumination was enhanced by a LED ring light attached to the objective. This system produced bright crisp images magnified 50-60 times.

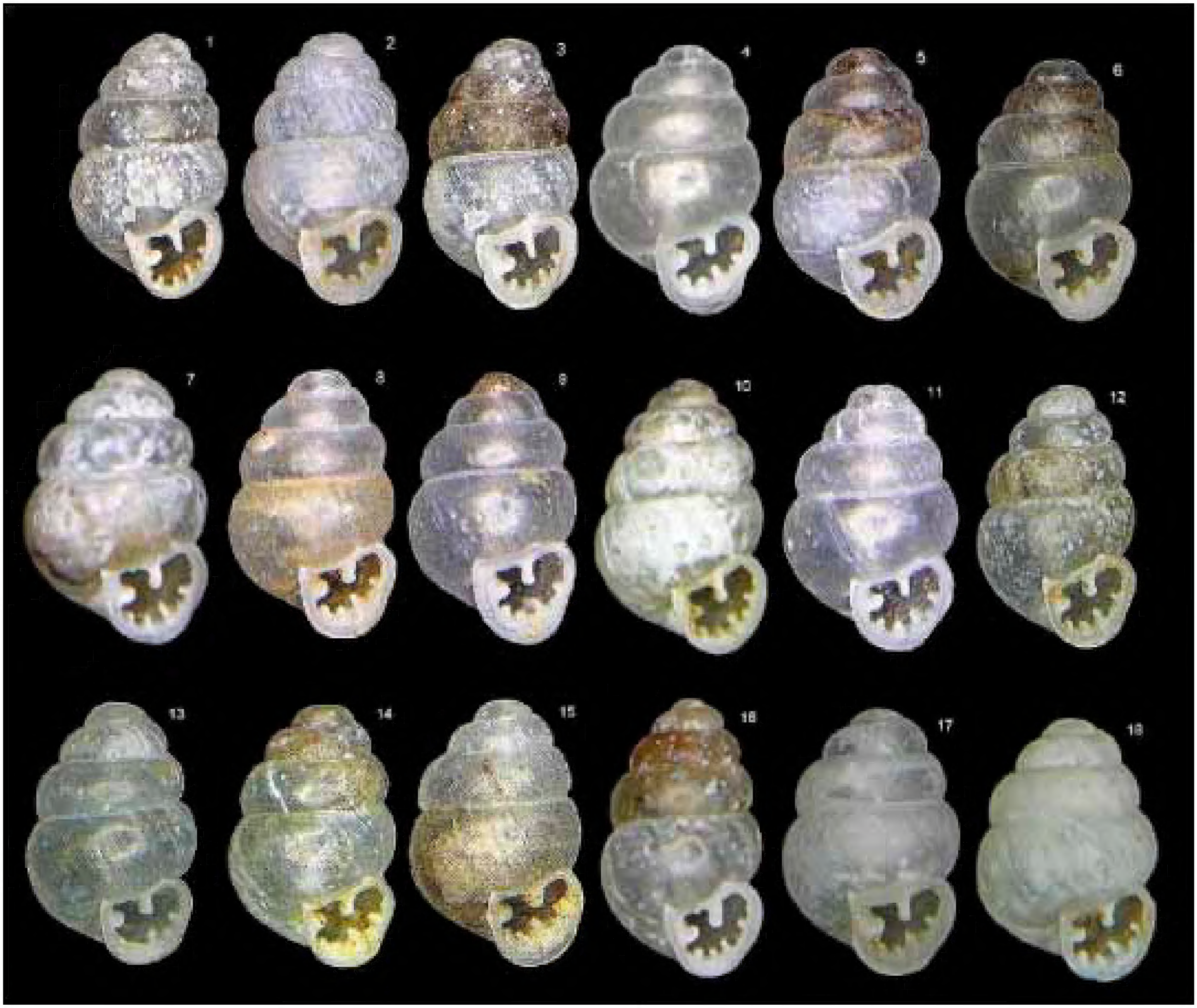


Fig. 5 ***Gastrocopta tappaniana*** **(C. B. Adams, 1841), 1.54-2.10 mm (not to scale), drift, Estill Fork (PRR), 1 mile north, Estillfork, Jackson Co., AL.**

Individual shells were mounted onto black cardboard and positioned to insure proper apertural pose for maximum height (H) and width (W) scaling using incident light. Vagaries of optimal focal plane consequent to individual shell geometry made uniformity of magnification impossible; thus most of the 54 shell images were not to absolute scale. After imaging, each specimen was placed in a dedicated Gelcap® labeled with the taxon ID number in correspondence with its image caption in the composite and sent to JAC. Ultimately all material was deposited at the FLMNH (UFIZ nos. 564884 [*gracilis*], 564885 [*pentodon*], 564886 [*tappaniana*]; each lot's 18 constituents appropriately coded) as vouchers.

The initial jpg images produced by LS were edited by BF (Adobe Photoshop® and Paint Shop Pro®) and/or HGL (Paint®) software and assembled into matrices of three rows/six columns (HGL) as shown. Since absolute scaling was impossible, resizing of individual images to conform with publication constraints and to achieve a degree of dimensional homogeneity for aesthetic purposes was effected. This manipulation was undertaken in knowledge that measured proportions would be unaffected. Final images, as seen as composites in figs. 3-6, are magnified 15-20 times.

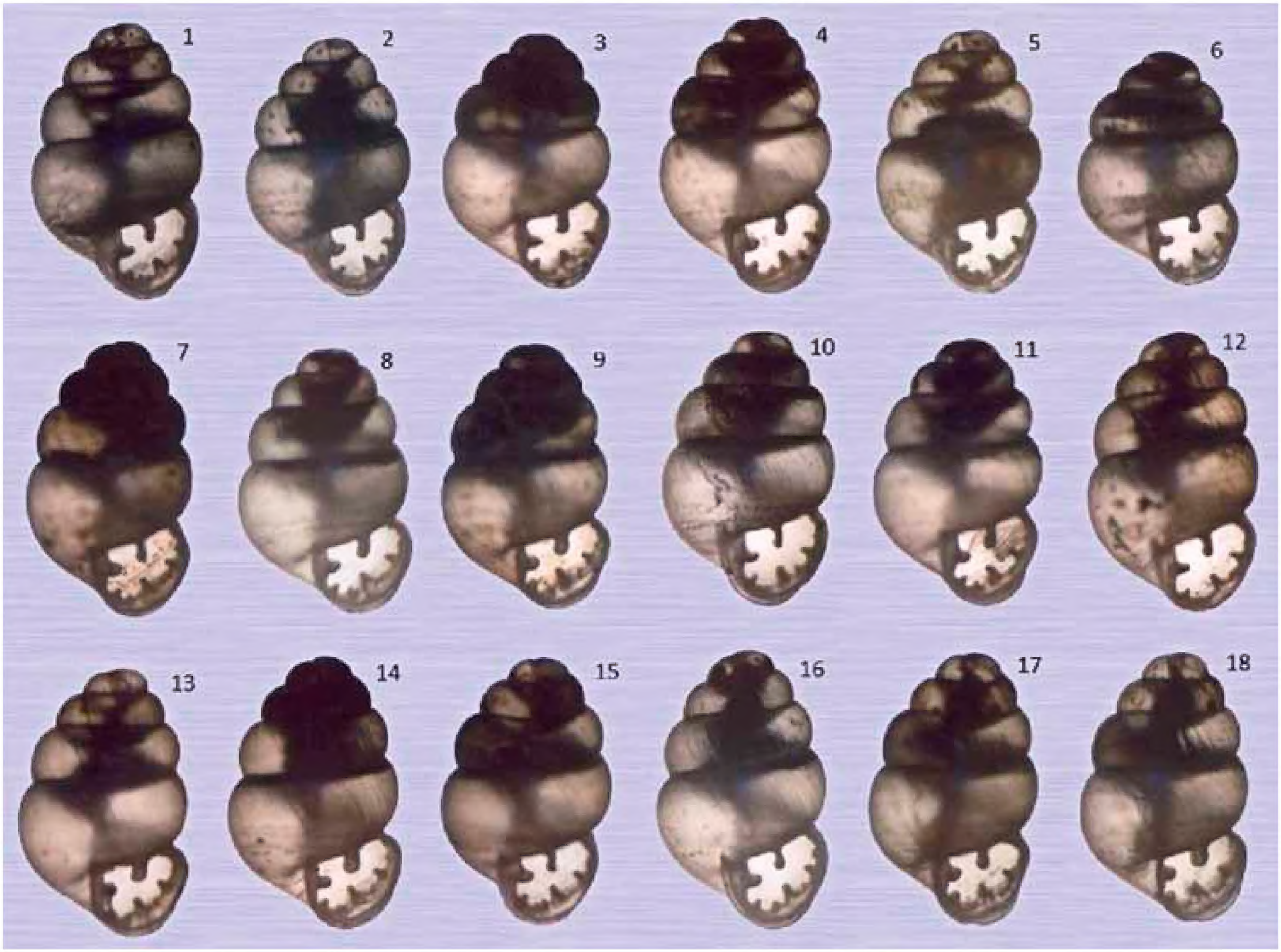


Fig. 6 ***Gastrocopta tappaniana*, 2 mm (not to scale), Crosby Audubon Preserve, Orange Park, Clay Co., FL.**

As a form of control, a similarly constructed fourth image (**Fig. 6**) composite depicting 18 *G. tappaniana* collected alive by HGL on 4 October 2010, in the Crosby Audubon Preserve, Orange Park, Clay Co., FL, was made available. The images were made by HGL in late 2010, using transmitted light and essentially the same image editing as detailed above.

Variations in dentition and other apertural detail, whorl count, luster, etc., aside, there appear to be three rather distinct morphs here: cylindrical, narrowly conical, and globosely conical respectively. These qualitative geometries will now be the focus of further analysis.

JAC determined the height (H) of all PRR specimens in the study with a stereomicroscope and stage micrometer. Using standard morphometric parameters derived from some of the landmarks, nodes, and cords shown on the next page (**Fig. 7**), he made several measurements on each of the 54 images utilizing a Paint® software image grid and calculated several proportional metrics used in statistical comparisons. Excel® software was used for tests of statistical inference.

Data for this report consist of the measured heights of all 54 shells plus a series of eight measurements per shell, including H and W, from the images on the above plates. The other six measured image quantities were the H and W of the body whorl (BWH, BWW), antepenultimate whorl (APWH, APWW), and the penultimate whorl (PWH, PWW). The control images were then accorded the same treatment. All measurements were made to 3 significant figures with uncertainty in the last figure of ± 0.01 mm, except for the microscopic height measurements where uncertainty is about ± 0.003 mm.

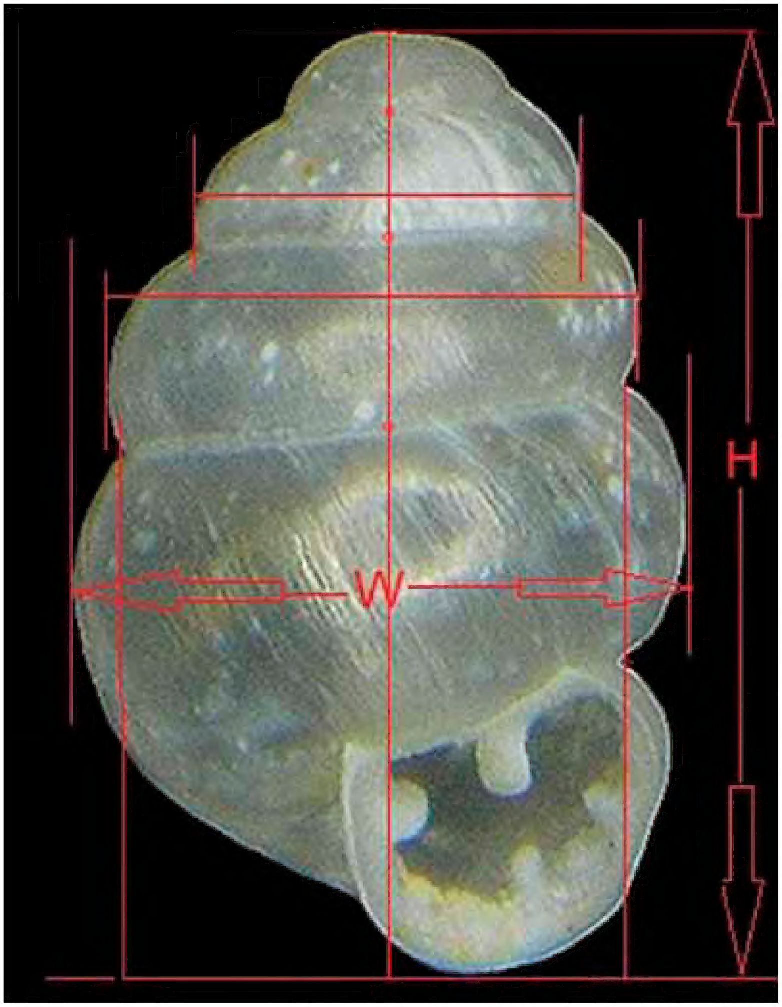


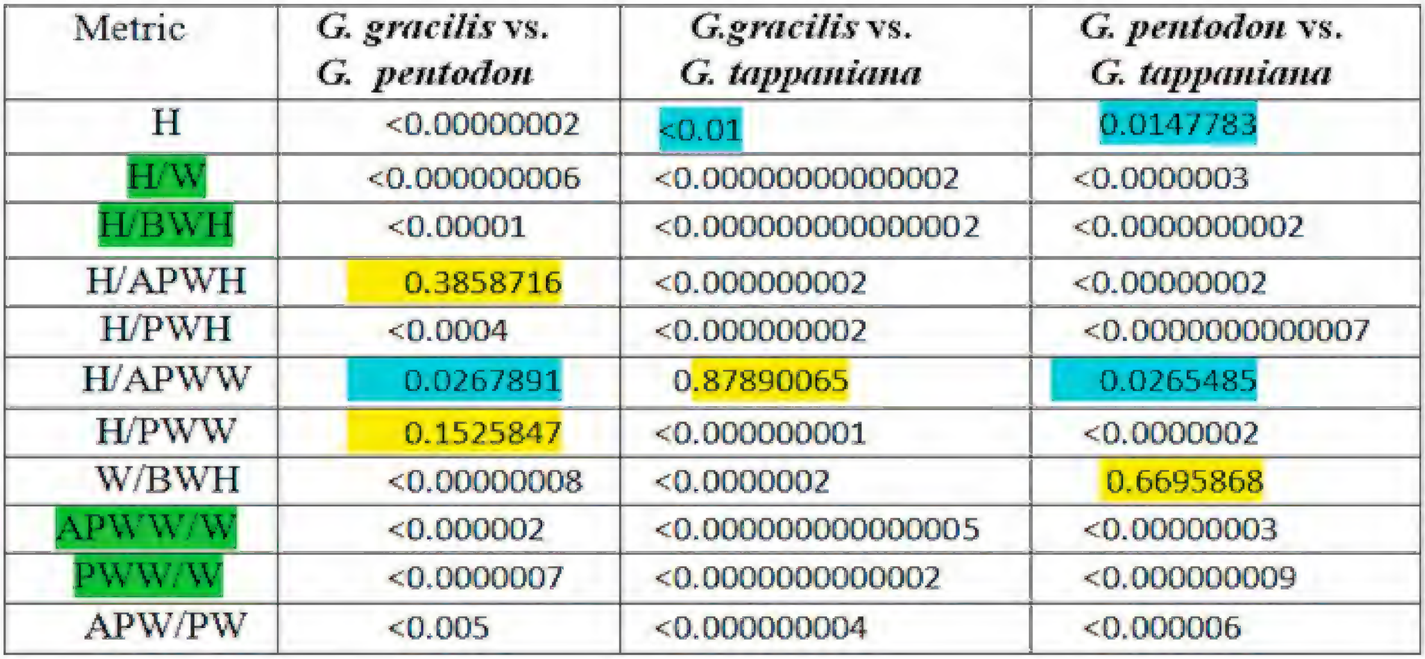
Fig. 7 Measured parameters used in comparisons.

Unlike the images, the shells are fragile, hence the many image measurements. Unlike the shells, the images are not to scale, however, ratios of the image measurements of a single shell are *ipso facto* scale invariant. Thus image measurements are best used as ratios.

Morphometry results and their statistical analysis presented and discussed:

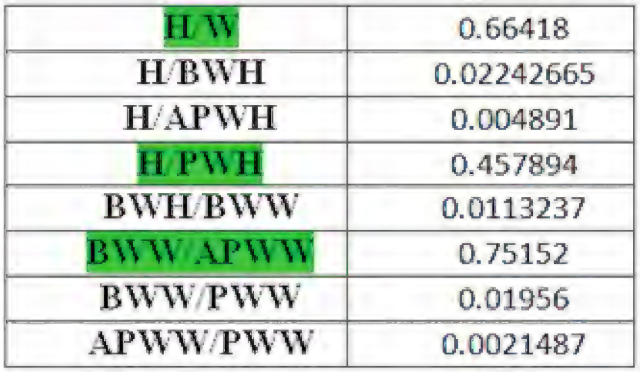
Data analysis began with the mean and standard deviation for all of the measured parameters and ratios. Then pairs of means were compared by the two-tailed Student's t-test, 33 tests plus 8 for the control group versus the *G. tappaniana* parameters (see **Table 1** and **Table 2**). In **Table 1** the null results are highlighted in **yellow**. The **light blue** highlight indicates results where the samples have a 1% to 3% possibility of belonging to the same population. All other results indicate a lower or very much lower probability. The **green** highlighted parameters are especially strong indicators of differences among the morphs. The table provides solid evidence of significant morphological difference among the three morphs.

To exhibit selected morphological differences, we supply both distribution and cluster graphs. The latter display the values of two different ratios for all 54 shells. Ellipses are added here as visual aids comparing clusters. For the former, data for each sample were binned into slots about equal in width to the average standard deviation for the three samples. The graph then displays number per slot versus the range of values for the combined three sample set.



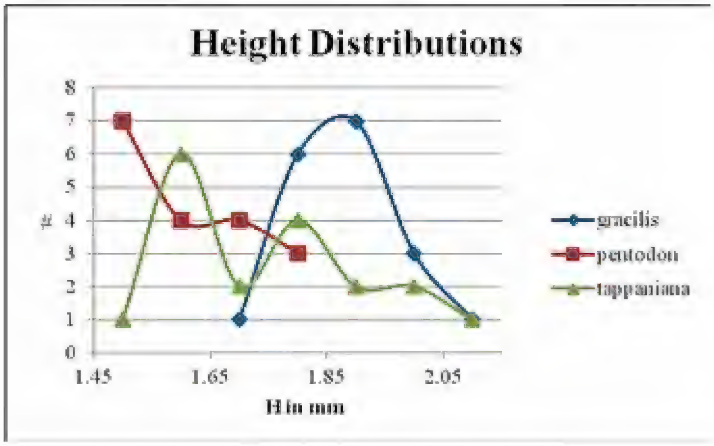
Metric	*G. gracilis* vs. *G. pentodon*	*G.gracilis* vs. *G. tappaniana*	*G. pentodon* vs. *G. tappaniana*
H	<0.00000002	<0.01	0.0147783
H/W	<0.000000006	<0.00000000000002	<0.0000003
H/BWH	<0.00001	<0.000000000000002	<0.0000000002
H/APWH	0.3858716	<0.000000002	<0.00000002
H/PWH	<0.0004	<0.000000002	<0.0000000000007
H/APWW	0.0267891	0.87890065	0.0265485
H/PWW	0.1525847	<0.000000001	<0.0000002
W/BWH	<0.00000008	<0.0000002	0.6695868
APWW/W	<0.000002	<0.000000000000005	<0.00000003
PWW/W	<0.0000007	<0.0000000000002	<0.000000009
APW/PW	<0.005	<0.000000004	<0.000006

Table 1. Probability the paired PRR samples belong to the same population.

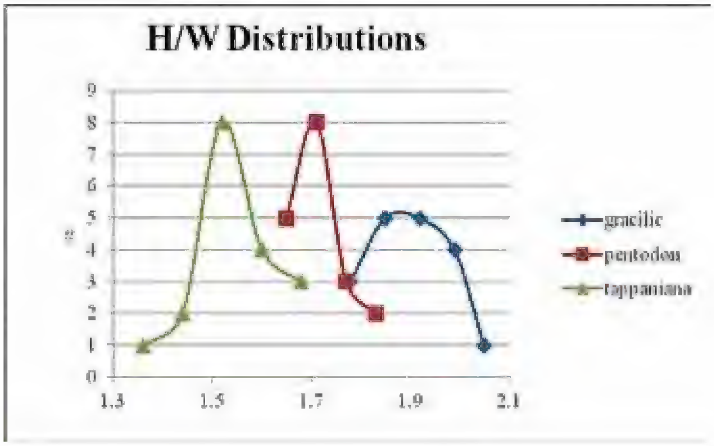


H/W	0.66418
H/BWH	0.02242665
H/APWH	0.004891
H/PWH	0.457894
BWH/BWW	0.0113237
BWW/APWW	0.75152
BWW/PWW	0.01956
APWW/PWW	0.0021487

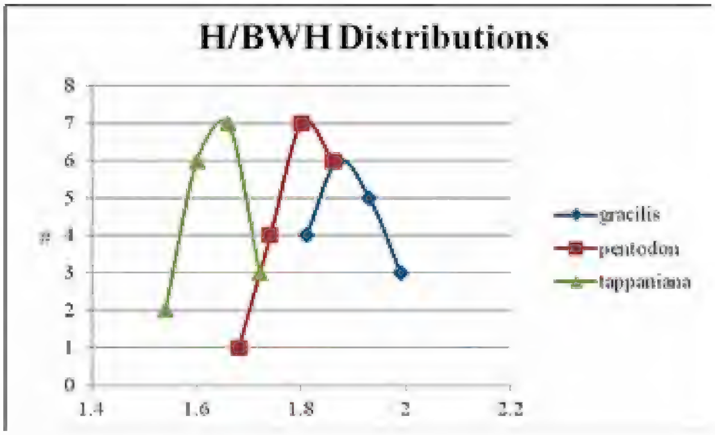
Table 2. Probabilities the control (FL) and *G. tappaniana* samples from PRR drift are part of one population.



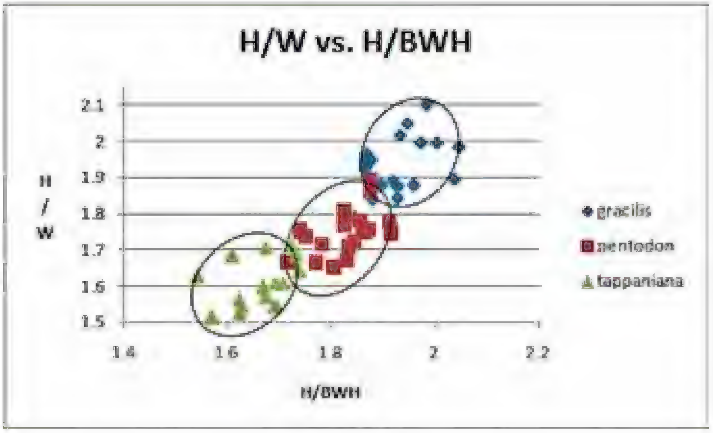
Graph 1



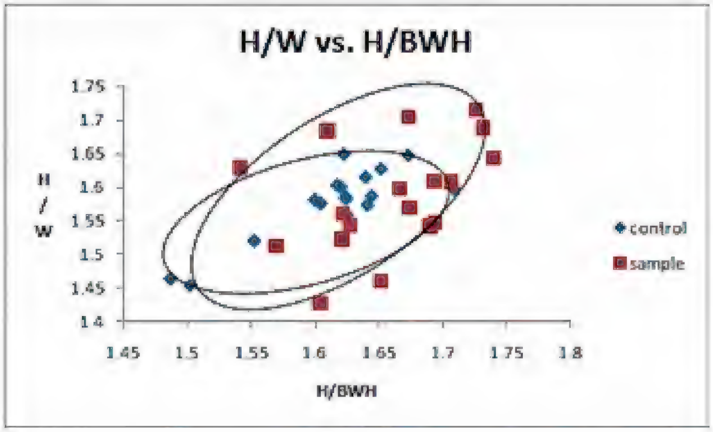
Graph 2



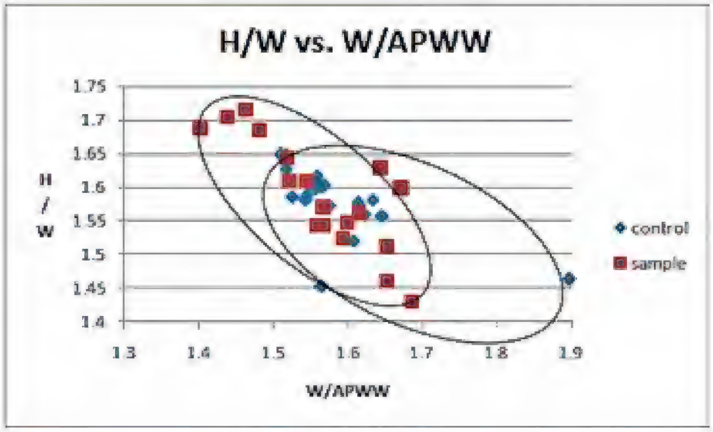
Graph 3



Graph 3a



Graph 4



Graph 5

Graph 1 seemingly suggests that shell heights may not discriminate among the three morphs since the range of *G. tappaniana* heights entirely subsumes that of the *G. pentodon* morphs combined. **Table 1**, however, shows there are fairly strong statistical distinctions among the morphs in this parameter.

On the other hand, plotting the shell height to width ratio decisively distinguishes the three morphs (**Graph 2**), as also do the t-tests (**Table 1**). The same is true of the ratio of the shell height to that of the body whorl (**BWH**), shown in **Graph 3**. These two parameters are the first two highlighted in green in **Table 1**. Note the bell-shapes of the plots in **Graphs 2 & 3**, suggesting a normal distribution, an assumption for our statistical methods.

A cluster graph of the two parameters (**Graph 3a)** then strikingly separates the three morphs while their congruence and proximity are consistent with the taxonomic concept of *Vertigopsis*.

Comparing the control sample with its PRR conspecifics generated **Table 2**. The **green** highlighted parameters tell us the samples are conspecific and also indicate what features of shell morphology are most distinctive of *G. tappaniana*. The cluster graphs indicate both how similar the two sample sets are while at the same time revealing the extent the species can diverge in distant sites.

Taxonomic discussion and Conclusions:

Using several parameters, and to an astounding degree of statistical certainty, we have shown morphometric distinction among shell samples collected at a single drift station and pre-sorted to three *Vertigopsis* taxa using simple low-magnification microscopic examination. In contrast, with the same metrics and statistical methods, the relative homogeneity of one of these PRR taxa, *G. tappaniana*, with a sample taken some 650 km (400 miles) distant was revealed. The distinction between that species and *G. pentodon*, demonstrated earlier using material collected some 970 km (600 miles) NE (Pearce *et al.*, 2007), is hereby supported. More central to the design of this study is the fact that, at least in the watershed of the Estill Fork of the PRR, three separate morphs belonging to the group, *Gastrocopta gracilis* (Sterki, 1890), *G. pentodon* (Say, 1822), and *G. tappaniana* (C.B. Adams, 1841), occur. Of *G. pentodon gracilis* [sic] Sterki, Pilsbry (1916: 28) conceded, "this race seems to be **tangibly differentiated** [our emphasis] in the hills of Alabama." He went on to state, "specimens may be selected from other lots of *pentodon* which could not possibly be distinguished if mixed with the Alabama shells," citing material from IA and IN. In our experience such occurrences are found only sporadically in geographically widespread populations, but they **do occur**, e.g., KY (LS), OH, TN (Sterki, 1890), and RI (Sterki, 1894). Are these morphs genetically the same as the distinctive PRR *G. gracilis*? Maybe; maybe not. It seems no less likely that it is a widespread cryptic sibling species occurring in variably low frequency through a portion of the range of *G. pentodon* but becoming particularly prosperous on and just below the karstic SE flank of the Cumberland Plateau in Franklin Co., TN and Jackson Co., AL. Perhaps our taxon is an ecophenotype occurring in certain widely-separated habitats where special characteristics are present, but why so common and distinct in NE AL? Another scenario may be that, while an ecophenotype elsewhere, it has undergone positive selective pressure to genetically isolate it from sympatric *G. pentodon* populations living in different (micro)habitats in the PRR drainage and perhaps other nearby areas. While we favor the full biospecies concept based on the evidence presented, we certainly do not dispute the value of bringing ecological and molecular genetic perspectives to this paradigm.

Short version:

***Gastrocopta* (*Vertigopsis*) *gracilis* (Sterki, 1890) is a valid species -** with some uncertainties as to its origin as well as its genetic, ecological, and geographic limits. Finally, we reiterate the unique provenance of riparian drift collection in allowing the opportunity to power this study and thus an improved understanding of land snail biology – including systematics.

Acknowledgements:

We thank Paul Callomon (ANSP) for his search for type material of *G. pentodon*; Dr. Sam Caudill, Atlanta, GA, who gave valuable advice on statistical methods; Dr Ann Heatherington, who supervised HGL in the SEM Lab of the Dept. of Geology, University of FL; John Slapcinsky, Collections Manager, Invertebrate Zoology, FLMNH for curatorial support; and Dr. Wayne Vandevender, Professor Emeritus, Appalachian State University, Banner Elk, NC, who produced the SEM of *G. perversa*, which specimen was found in duff collected in Sta. Cruz Co., AZ by Robert H. Lee of Eugene, OR. Mr. Slapcinsky and another (anonymous) reviewer made suggestions that improved the quality of the manuscript.

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Harry G. Lee (hglee2@mindspring.com), John A. Cramer, Lori Schroeder, Bill Frank & Robert E. Winters

There were a number of really superb videos presented at the recent virtual Sanibel Shell Show. Follow this link (https://www.youtube.com/channel/UC-ZMmVBBFU9aPxbeOwWR1puQ) to view some 55 assorted shell-related videos (videos about the club, local collecting, Bailey-Matthews Shell Museum highlights, shell contests, etc.). The selection is extensive. At the same time, we now have a related vieo about COA available on our web site at (www.conchologistsofamerica.org) or via direct link: (https://www.youtube.com/watch?v=tyC6lhDc0Pc)

Living Seashells of the Tropical Indo-Pacific

by Andrey Ryanskiy

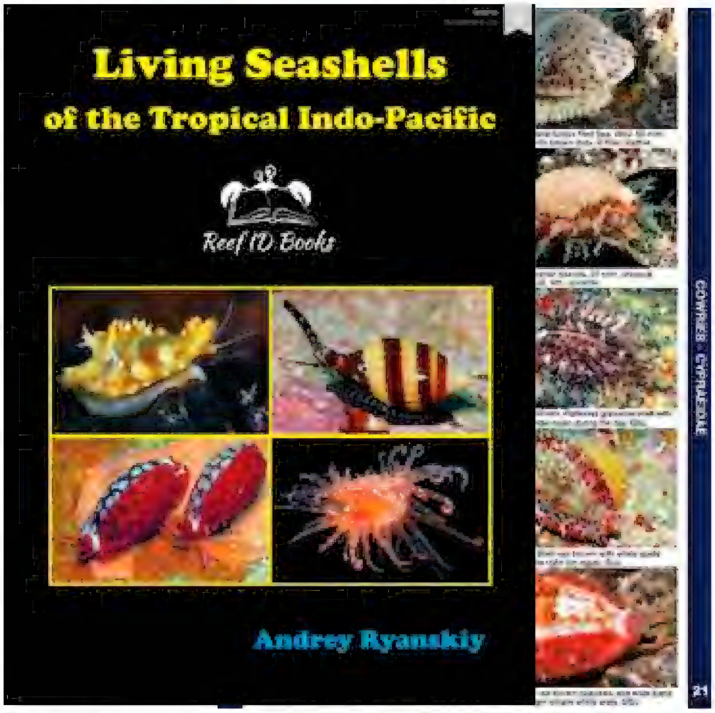
ISBN 9785604204993 pub: 2020
www.reefidbooks.com
available on Amazon.com:
Kindle edition: $21.99
Paperback: $48.99

reviewed by Thomas Eichhorst

On 24 January 2021, I received the following email:

> Hello Tom,
>
> Hope you will have time to review this new book for the next issue - that I just emailed Anne Joffe about:
>
> "I just received a very recently published book - with three pages (30 photos) of living chitons - and thought of you. "Living Seashells of the Tropical Indo-Pacific" by Andrey Ryanskiy - Reef ID Books - has fabulous photos (and I don't use that word often) of live species, many taken by Scott Johnson and his wife Jeannette. I knew Scott since I was a member of HMS and lived in Hawaii '68 - '76. He was a student at UH then and just beginning his photography career. Reconnected with him 1/14 and he told me about this new book. I hesitated to order it - it seems to be only available through Amazon, but did, and arrived very quickly."
>
> Since I only collect Hawaii shells - and am very interested in the animals as well as the shells (wanted to study to be a marine biologist, but had three kids - about to go to college themselves). This book is fascinating to me. Hope you will enjoy it as well.
>
> Does COA give you a budget/donate books for you? If not - they should!
>
> Best - Fran Wright, Florida

I whined a bit about buying another general shell field guide (just so my wife understands I am forced into these things), but in the interim, the author, Andrey Ryanskiy, graciously sent me a PDF copy, free of charge. I appreciated this as it saved me some money and I prepared to review the PDF version. **After skimming the PDF, I went online, logged onto Amazon.com, and purchased the paperback edition.** It was immediately obvious that this was an important book that I wanted in hand; an electronic version was just not enough. I cannot imagine a shell library that would not benefit from the addition of this book. There are 2,600 full-color photographs of 1,500 living species of mollusks, and as Fran stated, these are "...fabulous photos." Many of the species are presented here, *in situ*, for the first time ever.



The book includes a brief introduction and some facts and figures about different molluscan classes (gastropods, bivalves, and chitons). It also has a pictorial table of contents by family as well as an index by genera. There is a plate with several living mollusks (four gastropods, one bivalve, and one chiton) with technical morphological terms illustrated with each subject. After these few pages, there is page after page of stunning photographs.

About the book, the Amazon web page states, "It is designed for divers, underwater photographers, snorkelers, shell collectors, beachcombers, and nature lovers." All certainly true, but it should be added that it just might be a "must" for conchologists. A great shell book buy to start off 2021. And let's face it. The price is such that the meal out you are not able to partake in right now would more than cover it.

Ryanskiy's book is one of several he has authored in a series of marine-based field guides, including:

"Coral Reef Crustaceans from the Red Sea to Papua"
"Coral Reefs Philippines"
"Coral Reefs Indonesia"
"Coral Reefs Maldives"
"Living Seashells of the Tropical Indo-Pacific"
"Nudibranchs of the Coral Triangle"
"Reef Fishes of the Coral Triangle"
"Starfishes and Other Echinoderms of the Tropical Indo-Pacific"

All are available at Amazon.com in paperback or Kindle electronic versions, or as PDF versions at www.reefidbooks.com. Because I have a drawer full of dried sea stars as well as quite a few preserved crustaceans, I went ahead and ordered the sea star and crustacean books.

More on cowrie sinistrality

Moshe Erlendur Okon

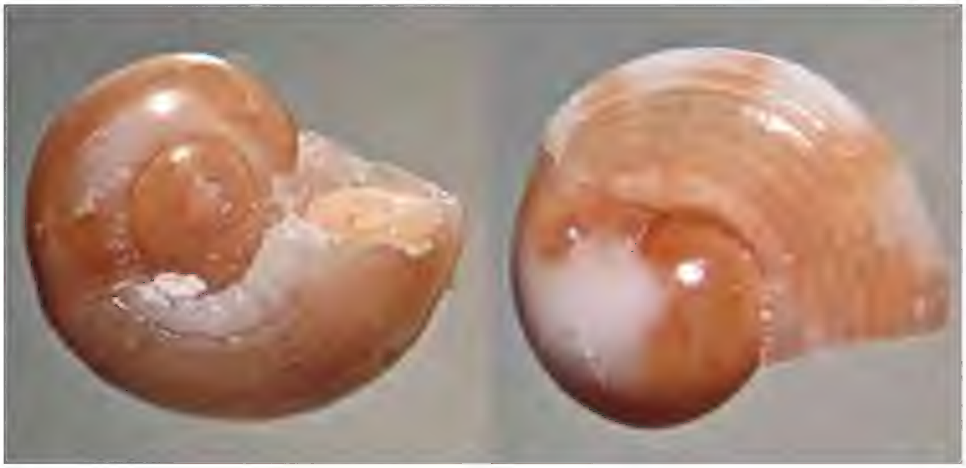


Fig. 1. The protoconch of a heterostrophic *Psilaxis* sp. from Hawaii. 3 mm. The transition from hyperstropy to orthostrophy is visible. The image on right shows the apical view, while the image on the left shows the false spire (actually the umbilicus). (Photo & Col. M.E. Okon).

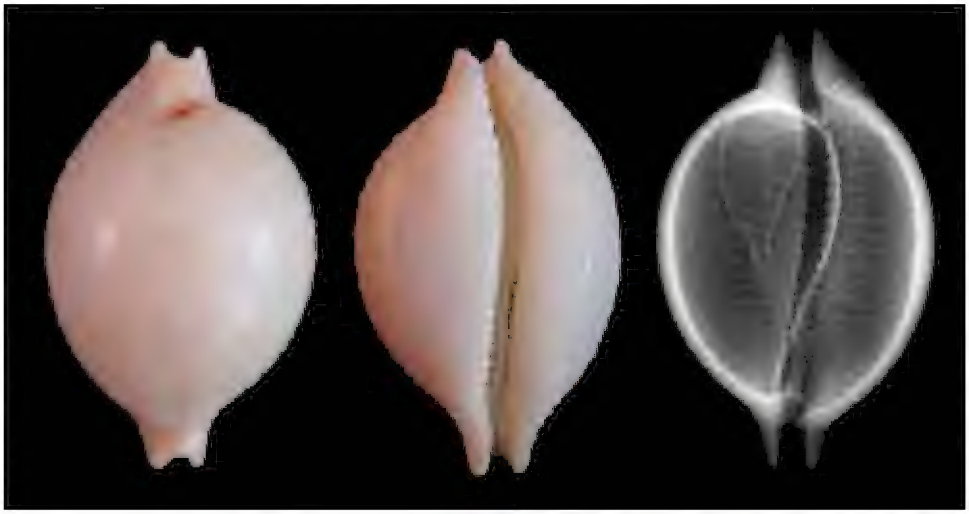


Fig. 2. *Pustularia cicercula cicercula* (L. 1758) 23 mm. from the Philippines. (Photo & Col. M.E. Okon. X-ray courtesy of Prof. Y. Marmary).

Five years ago, I wrote a paper on sinistrality in cowries for my series on Dwarfs & Giants[1]. Don Cram's and Michael Lyons' report on the first sinistral cowry[2] in this magazine's previous issue seemed like a good opportunity to republish it here, with some minor changes and the kind permission of the *Beautifulcowries Magazine.*

Almost all gastropods, cowries included, are orthostrophic[3]. Strophy is the direction of translation of the shell (advancement of growth away from the protoconch) related to the mollusc, and orthostrophic means that the shell grows along its coiling axis towards the anterior part of the animal. There are also hyperstrophic gastropods, such as the genus *Limacina*, in which the shell grows towards the posterior part of the animal, and once there were even isostrophic ones, in which there was no translation along the growing axis and the growth was truly logarithmic. Some shells, such as the architectonicids, are heterostrophic, meaning that the direction of translation changes (Fig. 1).

Orthostrophic shells are usually dextral; the coiling is clockwise when viewed from the apex – in these "right handed" shells the aperture is on the right side when holding them apex upwards. Some shells are naturally sinistral; the coiling is counter-clockwise when viewed from the apex – in these "left handed" shells the aperture is on the left side when holding them apex upwards (e.g. *Neptunea contraria*). In rare cases, individuals of normally dextral shells can be sinistral ("reverse coiling").

It is important not to confuse strophy with chirality (direction of coiling around the axis). The abovementioned *Limacina*, is not sinistral (as it would appear to be if held with the narrow part of the shell upward), but rather dextral – because it is hyperstrophic. And a *Planorbis* is not dextral, but rather sinistral – because it is orthostrophic. Bear in mind that the shell is formed by an animal, and therefore is in relation to that animal's anatomy. (Such anatomy is rather complex, as the mollusc itself also goes through torsion during its ontogeny, but that is a different matter.)

Handedness makes perfect sense when thinking of a cone shell, for instance. It is clear where the apex is, and therefore what side the aperture is on. But cowrie shells are more symmetric looking. At first appearance, it is sometimes difficult to discern the anterior and posterior ends, and position the shell apex up. Fig. 2 shows an extreme example – *P. cicercula*. This shell appears to have bilateral reflectional symmetry: not only vertically, but also horizontally. Its x-ray picture, however, clearly shows that it does not.

When a young cowrie hatches from its egg, it either settles down on the sea bottom immediately (lecithotrophy: direct development) or floats freely for a period of time – hours to days (planktotrophy: veliger stage) – before settling[4]. Once the young cowrie has settled, it begins forming its juvenile bulla shell. This bulla, resembling an olive shell, grows for several weeks to months until the cowrie reaches its final size, and only then does the outer lip turn inwards, extremities develop, the base thickens, teeth form, and the characteristic colors and pattern develop.

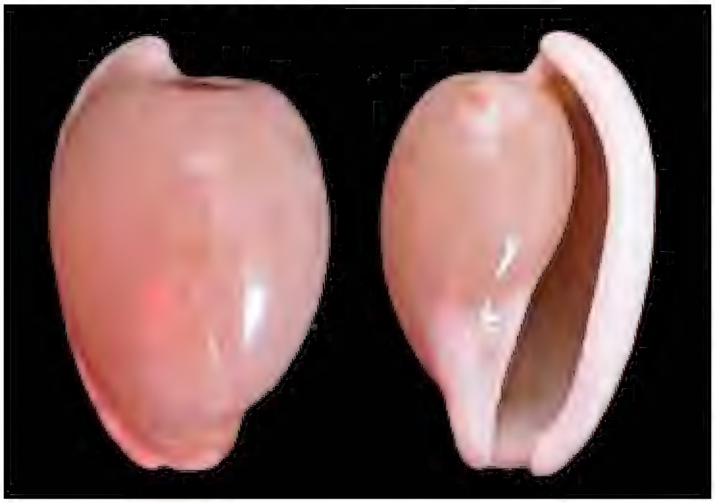


Fig. 3. *Cypraeovula edentula edentula* (Gray, 1825) 22 mm. Kini Bay, SA. (Photo & Col. M.E. Okon).

A quick glance at a fully grown *C. edentula* (as opposed to the *cicercula*) tells us which is the columellar side (indeed, the penultimate whorl can be clearly seen on the left through the wide aperture) and which is the labral side (right). The shell (Fig. 3) is completely asymmetrical. It is actually about this cowrie that Felix Lorenz writes[5], "The reason why *edentula* is more commonly found as a sinistral variety than any other cowrie species is a mystery."

Most cowries are not symmetrical, but are also not as blatantly asymmetrical as *edentula*. Depending on the level of symmetry, it would be easier or harder to discern a reverse coiled "sinistral" cowrie. This could, perhaps somewhat, explain Lorenz's wonder. Harry G. Lee[6] describes a case of a suspected sinistral *Mauritia mauritiana* L., 1758, and the somewhat long and elaborate process of determining that, unfortunately, it was not.

In 1959 Bernard C. Cotton mentioned and illustrated[7] a sinistral specimen of *Notocypraea declivis* (G.B. Sowerby III, 1870), which Cram & Lyons believe was collected prior to 1933 (Fig. 4). This seems to be the first illustrated left-handed cowry, and was mentioned by R.J. Griffiths in 1962 in his review of the genus *Notocypraea*, but with no illustration[8].

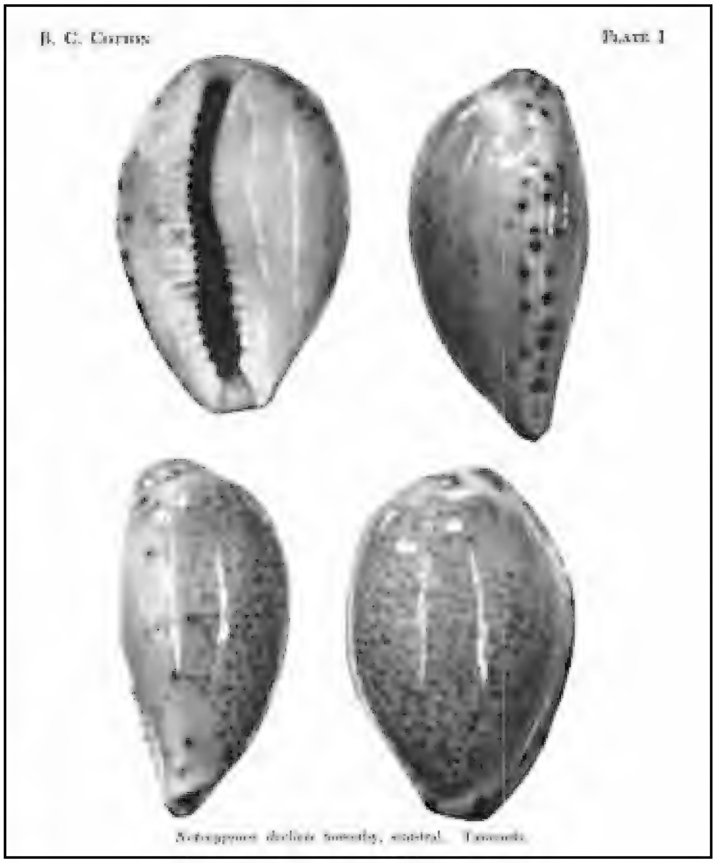


Fig. 4. The first illustrated sinistral cowrie: *Notocypraea declivis* (G.B. Sowerby, 1870) found in Tasmania. *Transactions of the Royal Society of South Australia* (1960) Vol. 83 to be read as 1959.

In 1964 Franz Alfred Schilder, a prominent cypraeologist and prolific writer on the subject, wrote[9]: "In cowries sinistral specimens are extremely rare, if indeed they occur at all… But I think that nobody will find a sinistral cowrie." Schilder was aware of the aforesaid mentioning of a sinistral *declivis* by Griffiths, but not of the illustration of it by Cotton. He therefore remains doubtful, but expresses a wish to see a photograph of the 'curiosity.' Based on his handling of over 150,000 specimens over his forty four years of research, his skepticism can easily be understood.

In the September 1967 issue of the Australian *Keppel Bay Tidings* newsletter, a report was given on a sinistral '*Cypraea stolida*' found off the central Queensland coast. The images were published in the following December 1967 issue. The shell (Fig. 5) is a *Bistolida brevidentata* (G.B. Sowerby II, 1870), then considered a synonym of *B. stolida* (L., 1758) (see, for instance, Burgess[10]).

Around the same time, sinistral cowries began being noticed on the South African shores (William (Bill) Rune Liltved, pers. com.), all in the genus *Cypraeovula*. In his book[11] he illustrated three such species here reproduced with his kind permission (Figs. 6, 7, 8). In 1994 a live

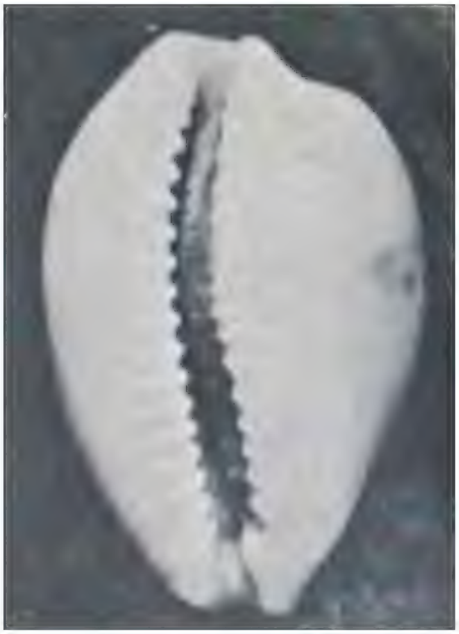


Fig. 5. The second illustrated sinistral cowrie: *Bistolida brevidentata* (G.B. Sowerby, 1870) found by Jack Aitken in 1967, off the central Queensland coast. *Keppel Bay Tidings* newsletter, December 1967.

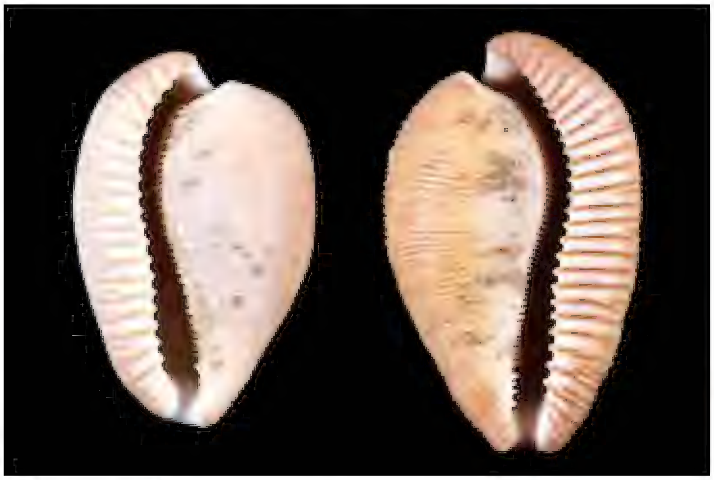


Fig. 7. Sinistral specimen (left) and ordinary dextral (right) of *Cypraeovula capensis* (Gray, 1828) as illustrated in Liltved's 1989 & 2000 books.

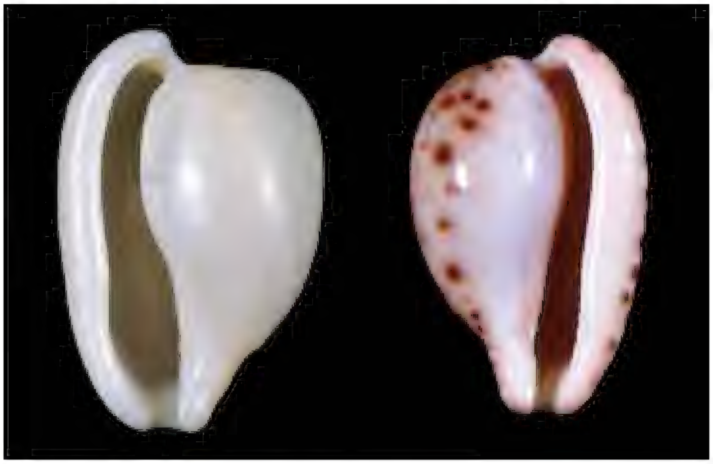


Fig. 6. Sinistral specimen (left) and ordinary dextral (right) of *Cypraeovula edentula edentula* (Gray, 1825), as illustrated in Liltved's 1989 & 2000 books.

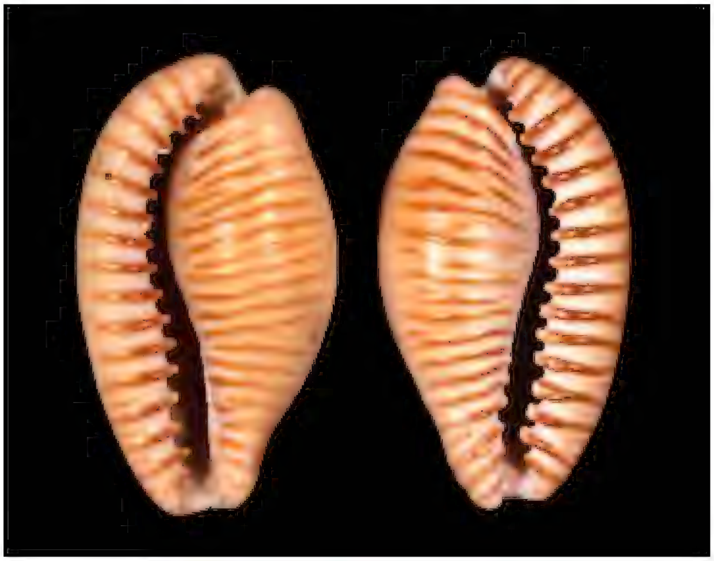


Fig. 8. Sinistral specimen (left) and ordinary dextral (right) of *Cypraeovula fuscodentata* (Gray, 1825) as illustrated in Liltved's 1989 & 2000 books.

C. fuscorubra was taken. Several photos of the animal and its shell were published in *World Shells*[12] one of which is here reproduced with the kind permission of the late Gabriella Raybaudi Massilia (Fig. 9).

A year later, a sinistral *N. comptonii* was collected, illustrated over a decade later in the *American Conchologist*[13] and here reproduced with the kind permission of Don Cram (Fig. 10). Several years ago, a sinistral *Muracypraea mus* was also collected, here reproduced with the kind permission of Lorenz (Fig. 11).

Lee (2010), notes that all of the sinistral cowries mentioned so far (which, except for *M. mus*, came from the southern hemisphere) are lecithotrophic, and hypothesizes that: "the planktonic milieu may exert stronger selective pressure against randomly-mutated reverse-coiled larvae relative to their normal counterparts than that imposed on hatchlings directly adopting the benthic lifestyle." He also remarks on the 'amazement' that no sinistral specimens of the ubiquitous planktotrophic species have been found, despite the many millions of which have come into human

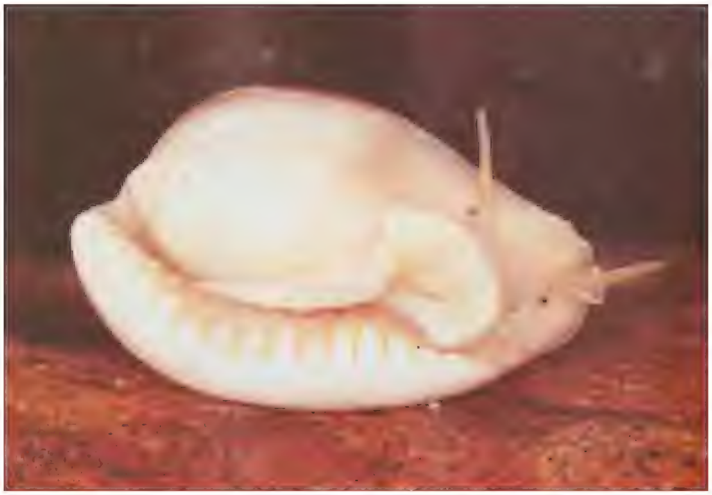


Fig. 9. Sinistral live taken *Cypraeovula fuscorubra* (Shaw 1909) dived by Bruno de Bruin off Cape Point, as illustrated in *World Shells*.

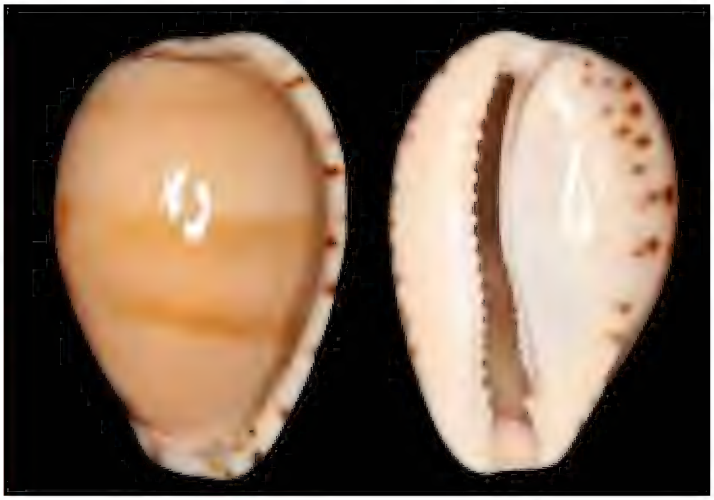


Fig. 10. Sinistral 22.8 mm. specimen of *Notocypraea comptonii* (Gray, 1847) found by Alena Bubenicek in 1995 off Port MacDonnell, South Australia. (Photo by Platon Vafiadis).

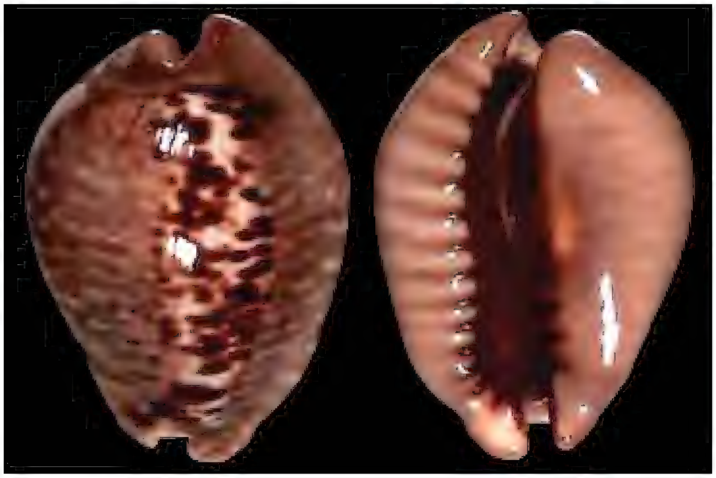


Fig. 11. Sinistral 37.5 mm. specimen of *Muracypraea mus* (L., 1758) found in Amuay Bay, Venezuela. (Photo by Felix Lorenz ex. Col. Andrey Kostin).

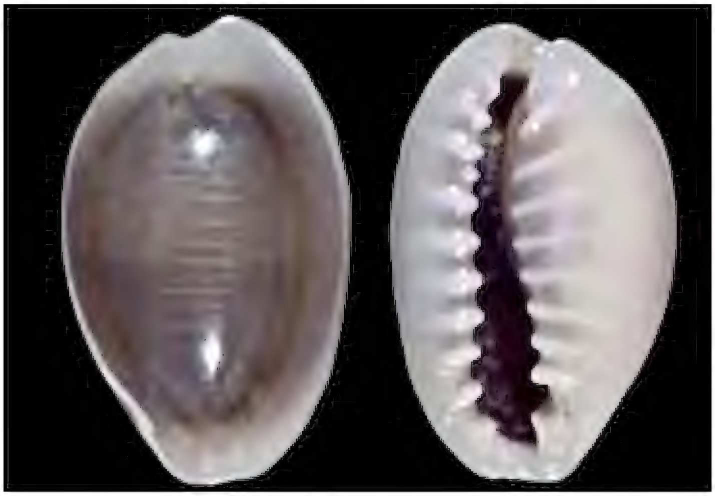


Fig. 12. Sinistral 14.2 mm. specimen of *Monetaria annulus* (L., 1758) found in Bohol, PI. (Photo & Col. Felix Lorenz).

hands. But one has, indeed, now been found: a sinistral specimen of *M. annulus*, also here reproduced with the kind permission of Lorenz (Fig. 12).

Why sinistral cowries are such a rare occurrence is still not fully understood, and the different factors involved in their creation (as well as other sinistral gastropods) are being studied[14]. One factor to consider is the manner in which cowries mate. A sinistral specimen (either male or female) would have its sexual reproductive organs on the left side instead of on the right, and so if the mating position is maintained, it would be much harder for the sinistral animal to copulate with an ordinary dextral one. The chances of a sinistral cowrie reproducing, therefore, are small.

Only recently[15], was a team of researchers able to identify the gene responsible for 'reverse coiling.' They found that the gene creates a protein named formin, and that if a defect is caused in this protein during the embryonic stage, naturally or by human intervention, the animal becomes 'reversed.' Of course, the question of what in nature causes such a rare defect, and why certain cypraeids are more prone to it than others, still remains.

The success of Davison et. al. in manipulating chirality, if reproduced by cypraeologists, could bring about the controlled creation of sinistral specimens. But apart from the value of these in the world of shell collecting, there is much to be learned by chirality and its implications, one of which is to compare the developmental genetics of asymmetric structures in other animals, including ourselves.

Endnotes:

1 Okon, M.E., 2016. Part 5: Sinistrality, *Beautifulcowries Magazine* No. 8, December 2016: 63-66.

2 Cram, D & Lyons, M. The first sinistral cowry, *American Conchologist* Vol. 48, No. 4, December 2020: 34-36.

3 Grebneff, A., 2005. Strophy: a poorly-known mode of coiling in gastropods. *Visaya* Aug. 2005. 1-7.

4 Okon, M.E., 2013. On dwarfs & giants, Part 1, *Beautifulcowries Magazine* No. 3 May 2013. 61-62.

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Moshe Erlendur Okon
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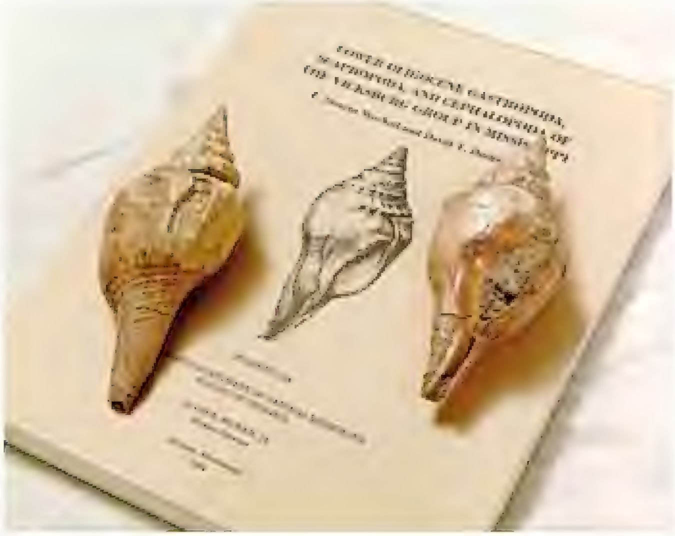
Shells (fossils) in the news



This is an image of two fossil specimens of *Turbinella wilsoni* Conrad, 1847, on the cover of the Mississippi Department of Natural Resources (MDEQ), Bureau of Geology, Bulletin 124, 1984, on the *Lower Oligocene Gastropoda, Scaphopoda, and Cephalopoda of the Vicksburg Group in Mississippi*. Dr. Emily Vokes was my Dissertation advisor at Tulane, when I published this in 1984. This photograph is Figure 862, in *The Geology of Mississippi*, 2016, by Dockery and Thompson and published by MDEQ and University Press of Mississippi (751 pages and 1099 figures). The figure was used as Exhibit D-86 in a trial after a casino development was denied by the State Gaming Commission in part due its potential impact to an important Oligocene fossil locality. These large conch shells illustrated the value of that locality.

Submitted by:

David Dockery
Director of MDEQ Office of Geology and State Geologist

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Support for COA

Sanibel-Captiva Shell Club (SCSC) presents a $1,000.00 check to COA for our academic grant endowments. Such donations are important because COA continues to provide about $25,000 in annual grant monies, even though we had to cancel our 2020 convention and the associated auctions that largely support COA grants. Left to right: Clair Beckmann, SCSC Grant Chairwoman; Donald Dan, COA Grant Donation Endowments Director; and Karen Silverstein, SCSC President.

John Jacobs unpacks shells graciously donated to COA by Jack Lilien of California.

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Due to continued COVID 19 coronavirus concerns, the registration package for the 2021 COA Convention, Melbourne, Florida, will not be sent out until the December issue. All of the planning and work continues apace. Planning includes coping with any possible restrictions. Please set aside in June 2021: 14-15 for the field trips, 16-18 for the convention, and 19-20 for the bourse. Changes will be posted in *American Conchologist* and online at: www.conchologistsofamerica.org.

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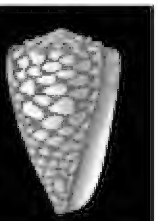

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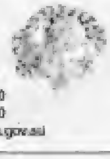

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Hydrobiidae (mud snails): a large family of small snails

Simon Aiken & Thomas Eichhorst

There are some 400 genera and more than 1,000 species in the family Hydrobiidae. These minute snails are all less than 8mm in shell length, with many smaller than 1mm! They are, for the most part, freshwater dwellers, although some inhabit brackish water and a very few may inhabit marine environments. They are operculate with shells typically lacking easily differentiated morphologies, and to compound difficulties in identification due to their small size, they demonstrate a high degree of intraspecific variability. All of this means Hydrobiidae taxonomy has been and continues to be problematic. Kabat and Hershler (1993) list 13 authors (some with multiple revisions) who classified this group of minute snails in as few as one family and one subfamily, to as many as 25 families and 31 subfamilies. Perhaps the most recent classification of Hydrobiidae is by Bouchet and Rocroi (2005), who list eight subfamilies within Hydrobiidae.

An example of the taxonomic travails encountered within this family is provided by the description of *Floridobia winkleyi* (Pilsbry, 1912) on the Jacksonville Shell Club web site (www.jaxshells.org). "When the species was named by Pilsbry, it was placed in the genus *Amnicola.* Frank Collins Baker (1926) created the genus *Marstonia* and transferred *A. winkleyi* into it. Fifty-nine years later it was assigned to the genus *Cincinnatia* Pilsbry, 1891 based on extensive anatomic study by Davis and Mazurkiewicz

1. ***Pontohoratia vinarskii*** **Grego & Mumladze, 2020 (Georgia, 1.6mm; paratype).**
2. ***Pontohoratia mapeli*** **Grego & Mumladze, 2020 (Georgia, 1.4mm; paratype).**
3. ***Pontohoratia pichkhaiai*** **Grego & Mumladze, 2020 (Georgia, 1.3mm; paratype).**
4. ***Bracenica gloeri*** **Grego, Fehér & Erőss, 2020 (Montenegro, 1.6mm; paratype).**
5. ***Travunijana vruljakensis*** **Grego & Glöer, 2019 (Bosnia & Herzegovina, 2.6mm; paratype).**
6. ***Travunijana robusta*** **(Schütt, 1959) (Bosnia & Herzegovina, 1.7mm).**
7. ***Imeretiopsis gorgoleti*** **Grego & Mumladze, 2020 (Georgia, 1.7mm; paratype).**
8. ***Imeretiopsis nakeralaensis*** **Grego & Mumladze, 2020 (Georgia, 1.8mm; paratype).**
9. ***Imeretiopsis prometheus*** **Grego & Palatov, 2020 (Georgia, 1.6mm; paratype).**
10. ***Antibaria notata*** **(Frauenfeld, 1865) (Macedonia, 1.6mm).**
11. ***Hausdorfenia pseudohauffenia*** **Grego & Mumladze, 2020 (Georgia, 1.5mm; paratype).**
12. ***Kartvelobia shishaensis*** **Grego & Mumladze, 2020 (Georgia, 1.4mm; paratype).**
13. ***Kartvelobia sinuata*** **Grego & Mumladze, 2020 (Georgia, 1.8mm; paratype).**
14. ***Saxurinator schlickumi*** **Schütt, 1960 (Kosovo, 1.5mm).**
15. ***Stygobium hercegnoviense*** **Grego & Glöer, 2019 (Montenegro, 1.3mm; paratype).**
16. ***Belgrandia torifera*** **Schütt, 1961 (Bosnia & Herzegovina, 1.9mm).**
17. ***Plagigeyeria konjicensis*** **Grego, 2020 (Bosnia & Herzegovina, 1.8mm; paratype).**
18. ***Plagigeyeria zetaprotogona vitoja*** **A. Reischütz & P.L. Reischütz, 2008 (Montenegro, 1.9mm).**
19. ***Plagigeyeria pseudocostellina*** **Grego, 2020 (Bosnia & Herzegovina, 1.9mm; paratype).**
20. ***Plagigeyeria zetatridyma*** **Schütt, 1960 (Montenegro, 2.7mm).**
21. ***Plagigeyeria olsavskyi*** **Grego, 2020 (Bosnia & Herzegovina, 1.6mm; paratype).**
22. ***Plagigeyeria reischuetzorum*** **Grego, 2020 (Bosnia & Herzegovina, 2,3mm; paratype).**
23. ***Plagigeyeria ljutaensis*** **Grego, 2020 (Bosnia & Herzegovina, 2.1mm; paratype).**
24. ***Caucasogeyeria gloeri*** **Grego & Mumladze, 2020 (Georgia, 1.8mm; paratype).**
25. ***Caucasogeyeria chrysomallos*** **Grego & Mumladze, 2020 (Georgia, 1.5mm; paratype).**
26. ***Radomaniola bosniaca*** **(Radoman, 1973) (Bosnia & Herzegovina, 1.7mm).**

(1985; e.g., Turgeon, Quinn, et al., 1998). Interestingly, all three generic assignments were concocted within the walls of the Academy of Natural Sciences, Philadelphia! It remained in *Cincinnatia* until 2002, when Thompson and Hershler introduced the genus *Floridobia* [Type (OD) *Amnicola floridana* Frauenfeld, 1863] and transferred *Amnicola winkleyi* Pilsbry, 1912 into it from *Cincinnatia*." (http://www.jaxshells.org/wink.htm; also available at: http://www.jacksonvilleshells.org/wink.htm)

Hydrobiids are found on all continents except Antarctica. The specimens displayed on the following pages (centerfold) and on the US quarter below are all from Eastern and South Eastern Europe – certainly not your typical shelling locality. Most of these species are associated with karstic environments, which give rise to a rich diversity of freshwater snails.

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With special thanks to Dr. Jozef Grego, Banska Bystrica, Slovakia.

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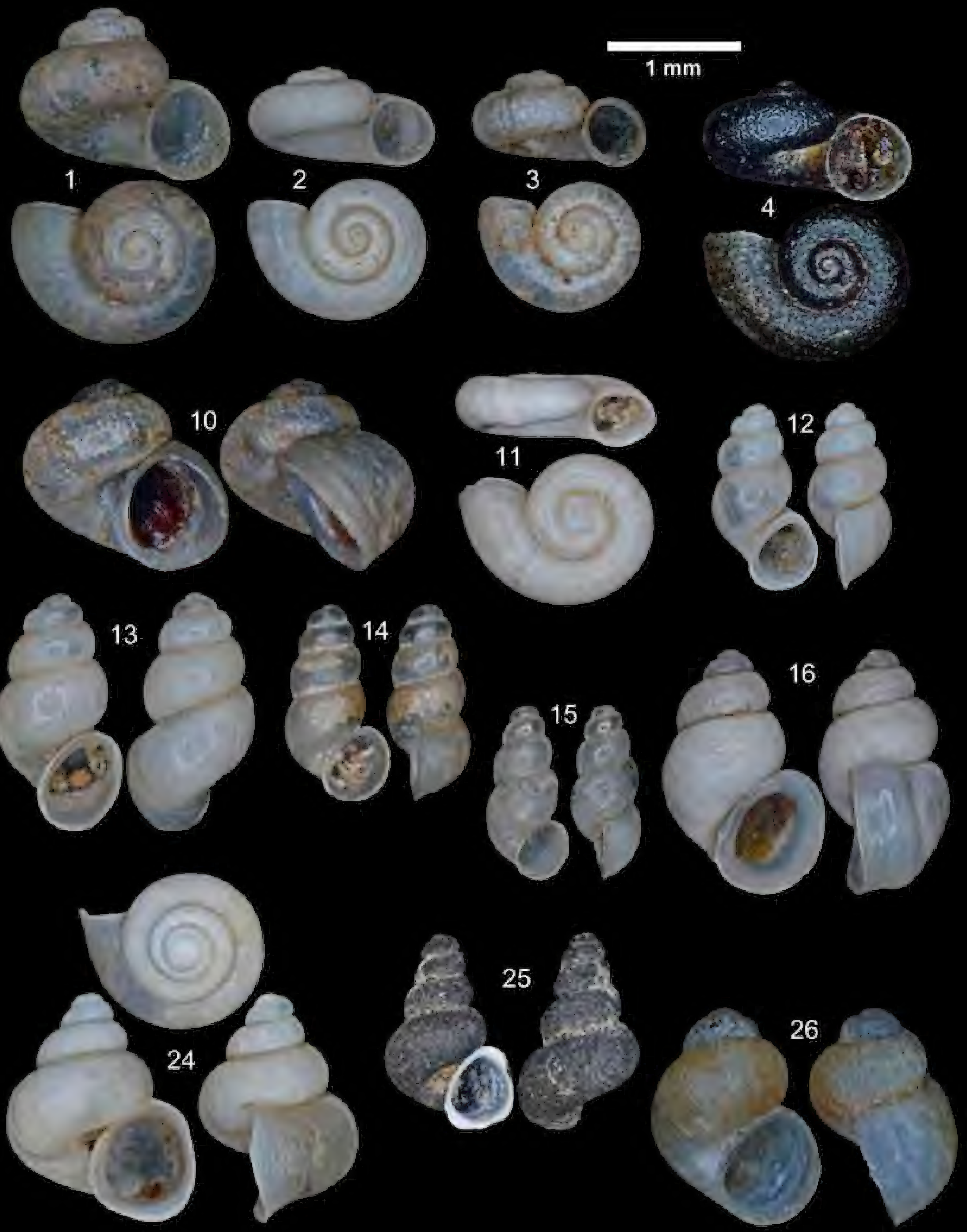
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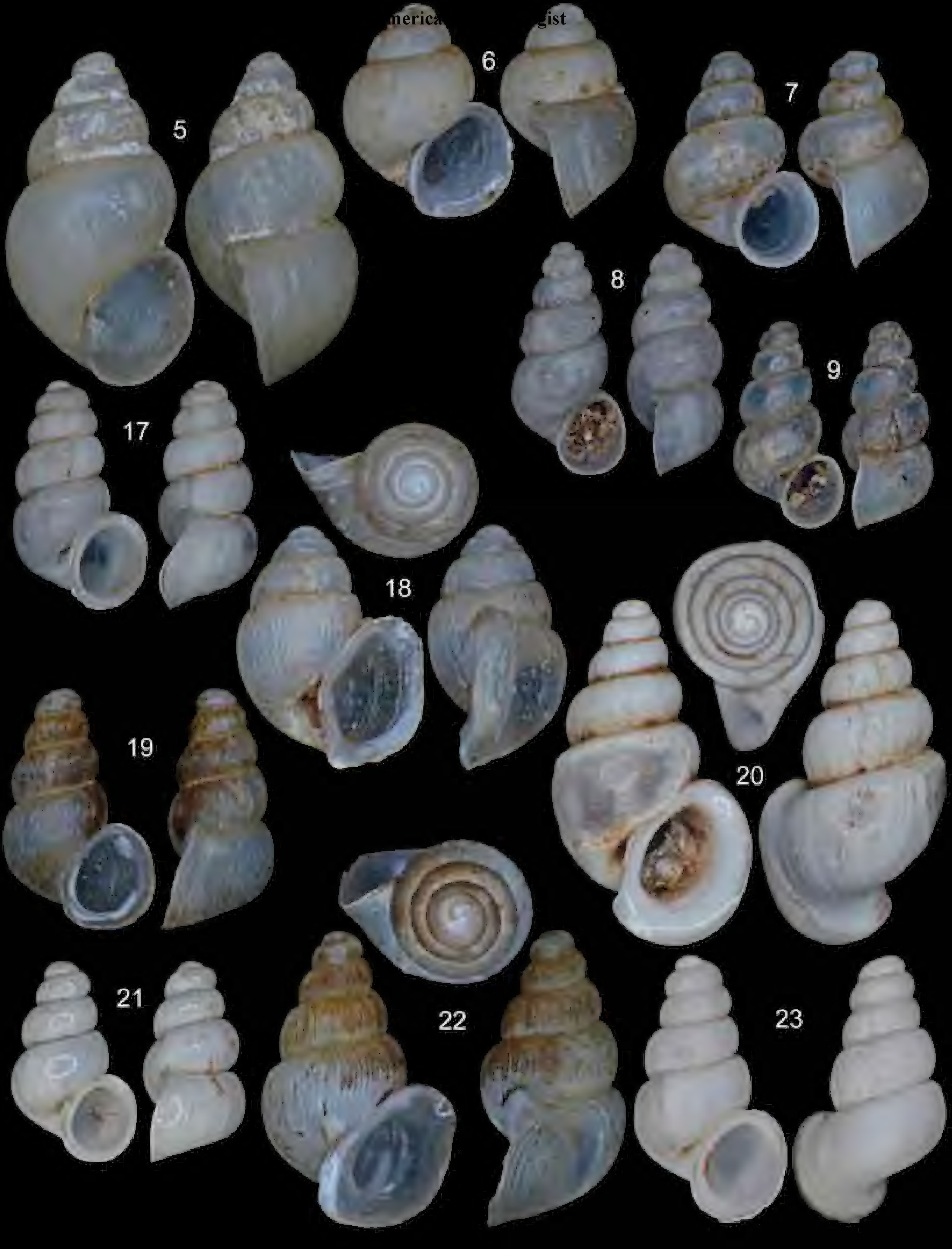
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Select components shell show exhibits

John Timmerman

A shell show display is both educational and a chance to display the wondrous and beautiful aspects of nature to a broad spectrum of participants – while at the same time competing for an award for a scientific presentation.

The genesis of this essay began as a presentation I made to the North Carolina Shell Club in May 2018. I was invited to present techniques on producing exhibits for shell shows. The presentation was an expansion and an exhibit with the same title that I entered in the 2015 North Carolina Shell Show. Though not my first document concerning building a shell show exhibit, it delves more deeply into the subject.

This essay concerns scientific shell displays. Art and crafts are an important element to many shows but require a different article.

My original concept was an explanation of what is seen and why by the general public attending the show. We may not realize that there is a lack of understanding as to why one exhibit is decorated with top awards and another, not. Both feature impressive shells. A parallel are flower shows I have attended. I see displays of gorgeous flowers, but can only guess the criteria of why some flowers merit top honors.

Building an exhibit and sharing it with the public in a shell show is not as hard as it may appear. Here I present ideas and strategies to a successful adventure to this end. When all is said and done, it is natural to experience reservation about the exhibit, however, when the show is running and you see the enthusiasm and attention the visitors are according your work, there is tangible success in sharing with the audience the enthusiasm for shells and maybe even imparting some knowledge in the process. It makes the trouble well worth it.

My goal is to assist exhibitors in shell shows at building exhibits – beginner and experienced alike. This presentation is built upon my personal opinion and experience accumulated during three decades associated with shell shows. I aim to help you build a good exhibit, but I cannot guarantee top honors. There are several paths to the summit. This is one.

Awards:

To promote a high professional standard in exhibits, an award system is employed. The amateur exhibitors become better "citizen scientists" via the high standards in exhibiting the award system promotes.

Museums and universities seldom have the necessary staff or funds to perform all of the studies and research they wish to do with shells. Well-trained citizen scientists are a valuable resource to professional researchers, thus the awards system benefits these institutions.

Individual awards promote exhibits that their sponsors define as especially important. If no single exhibit in the show qualifies for a given individual award or trophy, it is not awarded. The awards are sponsored by national, local, and private donors. An exhibit earning no award is not necessarily a bad exhibit.

Most shell shows, as we know them, include awards. Awards recognize excellence in scientific presentation. Simple errors in production can reduce the chance for earning an award, so do be careful while building an exhibit. World class shells may not be enough to offset presentation errors. Awards hold an importance beyond boasting rights of having earned one or more of them. They encourage us to present accurate and well thought out exhibits, better to entertain and educate the public. Learning something wrong is challenging to unlearn. Awards keep us focused to avoid the pitfalls inherent in assembling a display. Even when you earn an award, talk to the judges about your exhibit. There is always something to learn from these valuable resources. An exhibit meriting a top award may be improved with new ideas or technique. Have a thick skin. Pointers to your exhibit are offered as constructive advice and help, with no ill intent.

Fellow exhibitors may be flattered by questions as to how they prepare exhibits. Do respect limits! There may be strategies to success they are unwilling to share. Additionally, it is not uncommon for collectors to be reluctant to share with the world a favorite resource from which they collect shells. During set up or strike down at a show is not the time to ask questions, even of those who have been friendly and willing to discuss ideas with you in the past.

Anonymity:

Rules outlining shell show entries generally define that in no part of the exhibit during judging can there be any exhibitor identifying features, including photographs and or the name of the entrant. That said, anyone who is or becomes a regular exhibitor at shell shows is often known to the judges by the cases used for display and the style of a given exhibitor. Nonetheless, if there are images of you and your name, cover those parts before judging takes place. Before packing the exhibit to travel to the show, consider covering any of those features. During the hectic time of exhibit set up it is easy to forget this small detail. Forgetting may lead to the exhibit being disqualified.

Who is your Audience?

The question of who is your audience or customer is important to planning a shell exhibit. Everyone who sees your exhibit is a customer. We want to make our customers happy and have them desire to return. "People interested in shells" is perhaps too broad an answer. By virtue of where your exhibit will be shown, a shell show, you have a good chance that your audience will be interested in shells.

At a shell show there are subsets of people interested in shells. For example there are experienced, serious collectors who know a great deal of the science about the subject and speak the language of the professional conchologist. They are in contrast to a casual visitor who likes shells but may know little more than the most basic of popular terminology. The first person may know a large, orange lipped mollusk found in North Carolina waters as *Busycon carica* (Gmelin, 1791) and that it is a gastropod, and a predator specializing in bivalves. The second person may know the same shell as a knobbed whelk or even simply "conch." They may have little idea where the shell comes from much less that it was produced by an animal akin to a garden slug. They may have concluded that such shells are made by a hermit crab as that is the only time they have ever seen anything living in a shell.

I prefer to speak to the second group. They are a majority of people that visit shell shows and are an important aspect of the mission of the endeavor: to share knowledge and appreciation of shells and to promote interest in shells to the public. The serious shell collector may be accompanied by family members or friends with far less knowledge of the subject. I give priority to labelling shells with popular names and speaking in understandable language. For me an exhibit with a high fog index puts off many unfamiliar with the technical aspect of shells. I do embed technical information in the presentation, including accurate scientific classification and source data. It is a tightrope walk. One must adhere to the accepted scientific approach to convey good information, but not lose the customer with a budding interest. Judges are professionals and will certainly catch inaccuracies in scientific presentations. As mentioned, it is hard to unlearn wrong information, so take your presentation seriously and try to convey accurate information. The beginner you connect with today may go on to be conversant in the language of the professional tomorrow.

Most subjects have been done:

It is challenging to create an exhibit theme, idea, or variation that no one has ever done. I find it best to assume all ideas have been done at least once and not conclude my effort will pale compared to others. Worrying about originality and what others have done will defeat the idea before it even begins to bear fruit. Your approach will have unique elements, even if the subject has been done a hundred times. While awards are offered to promote excellence in exhibits and science, guard against losing the goal of connecting with your audience. The awards are important to the equation, but run with your idea and build a solid exhibit that successfully communicates the story. Accolades received will be icing on the cake.

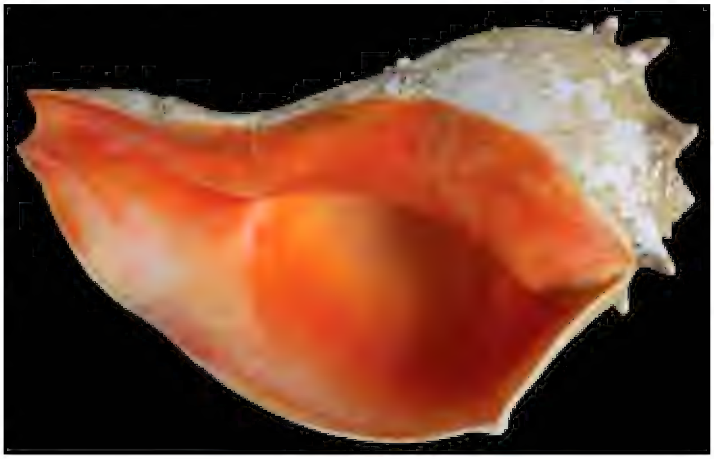


Fig. 1 This shell has been or is presently called or classified as: conch, knobbed whelk, lightning whelk, *Busycon carica* (Gmelin, 1791). None is incorrect, but scientific accuracy dictates that the last classification be included in your exhibit regardless of the choice(s) of other names. The judges will look for *Busycon carica* (Gmelin, 1791). Selecting one of the other popular names is an important first step to connecting with your customers.

Tell a Complete Story:

Your exhibit will be examined by judges who likely know the subject by heart, but never assume that any information is not important enough to include due to the skill of the judges. While the judges and advanced collectors know the 'whole' picture and may not need minor details to arrive at a conclusion, the person who knows little can easily be left with questions. The judges will review the exhibit as if they have never seen the subject dealt with before and ask themselves, "Did it answer my questions?" "Did it create unanswered questions?" The judges may even see or learn something new from your exhibit.

That said, when developing a subject look carefully at all that needs to be included in order to tell the complete story. If your original idea grows into something too big to include complete information, it is probably time to reconsider the original idea and maybe establish some limits. Refine the idea to keep the exhibit within manageable size for the resources available to you. For example you may want to show a complete collection of worldwide cones. That has the potential to be a very large exhibit! If you have three easily portable cases, the chance of fitting them all in without serious omission is high. A solution might be to profile cones from a specific region of the world, such as the Caribbean or West Africa. Even the Indo-Pacific will likely need more space than those three cases provide. Perhaps a focus on "glory cones." Cones with netted markings might be considered. By defining the exhibit as a profile or a sampling of worldwide cones reduces the need to represent all species. By defining a goal, you have a defined a path and needs therein.

The introduction must state the intent in simple language. A single line or short paragraph is ideal. Your audience is likely to have a short attention span. Do not risk losing them with too many words.

Protect Your Exhibit:

Before going any further, for the safety of your display, covered cases are a must. It is intuitive to add to the experience via touching and handling the shells or other items you have on display, but even a closely watched exhibit takes only seconds for an inquisitive person to handle specimens when you or a proctor looks away momentarily. I had a scare at a show when it was time to pack. I removed a cover from a display, wrapped a specimen for shipment, and turned to place it in a box for transfer. When I turned around seconds later a child was picking up and dropping the other specimens not yet packed. I gently admonished him to stop and he replied, "You removed the cover from the case!" You do not want anyone handling your shells. The cost of protection is worth the peace of mind.

Another way of looking at it is do you want to be responsible for damaging someone's shell? Even experienced collectors who know better are tempted to handle something that is not covered. If you have never damaged one of your own shells, you belong to a very exclusive club. You certainly do not want to drop another collector's shell! Forgiving someone for damaging a prized specimen is far easier than being the person who did the dropping. It is better not to tempt the devil. Cover everything up!

Cases are like a frame on a picture. They can add positively to the presentation or they can damage it. If you have no cases and begin to shop you will quickly realize there can be a high cost to good cases. A very basic shadow box with a glass cover is all that is needed. How fancy the cases are is up to you. Expensive cases, while beneficial to the presentation, do not guarantee prestigious awards. Be sure it is neat. The glass or other covering must be clean and not scratched. If you have the talent and can build your own cases you can realize a cost saving. A friend or club may have cases you can borrow. You may find a case in a tag sale that was made for other items that will work great for shells.

Covered Case vs Uncovered:

It is natural to want to see the side of the shell that is facing down, especially ones with which you are less familiar. An uncovered shell will be turned to satisfy this curiosity. Similarly, a book may have significant value and leafing through a copy on display is a natural instinct. Perhaps there is information that a displayed book can perfectly provide. All well and good, but do you really want everyone leafing through your book? As the owner and exhibitor you will rest more easily knowing that there is a good barrier preventing such actions. Preventing dishonorable actions such as theft is obvious.

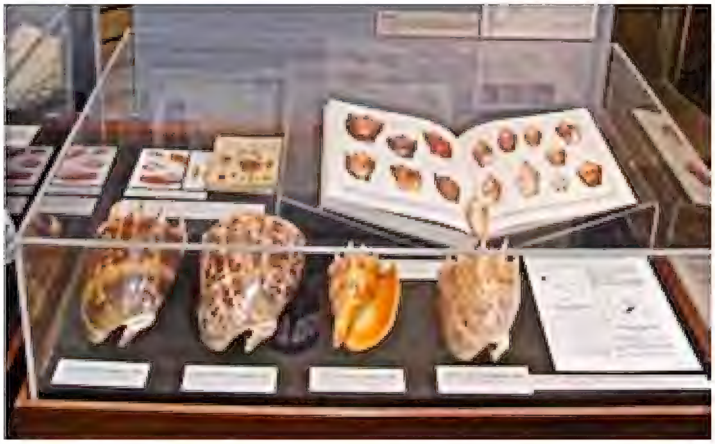


Fig. 2 The covered case provides protection and security to your display. The peace of mind will allow you to pay more attention to your 'customers' rather than worry about protecting your display.

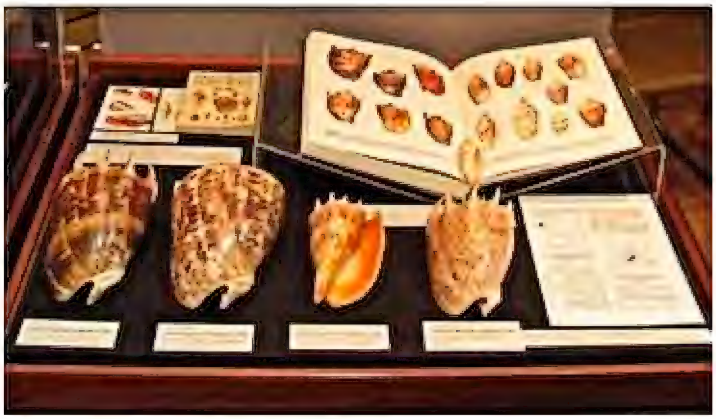


Fig. 3 The uncovered case is certainly accessible to viewers, but the associated risks are too serious to ignore.

Background Color/Case Fabrics:

The color of the lining of the case is important. Like the matte on a framed picture, it should complement or enhance the shells. No color is prefect, although some are a better choice than others. Muted gray tones are generally best with all colors. Color can be determined by the shells. For example white shells will not "pop" on a white background. A smooth but soft textile such as linen works well. Highly textured fabrics can prove challenging to keep clean and free of dust, though the shells will be less likely to move. Avoid bright colors as they tend to overpower the subject. The following examples use a New England Neptune *Neptunea lyrata* (Gmelin, 1791).

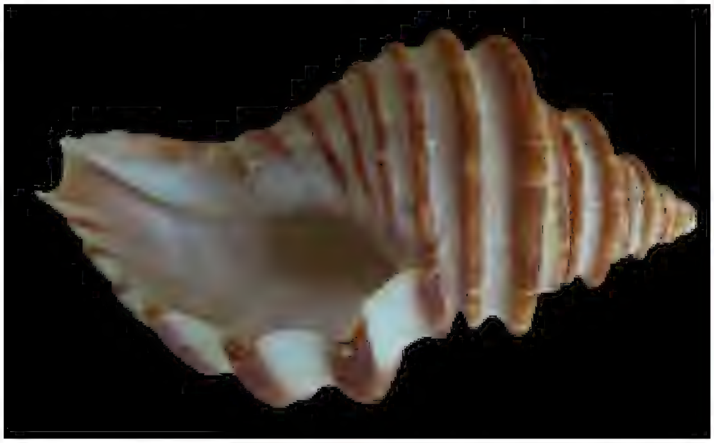


Fig. 4 Black – Many books and publications utilize black as it tends to make most shells stand out. Black shells are, of course, the exception. Black is challenging to keep clean as any sand, dust, or dirt will show quite well.

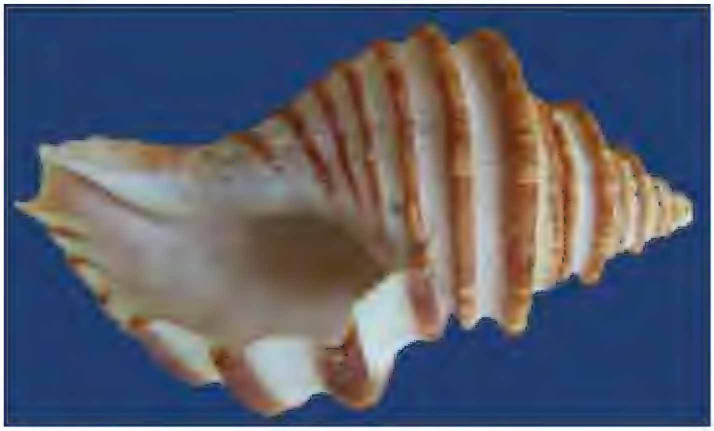
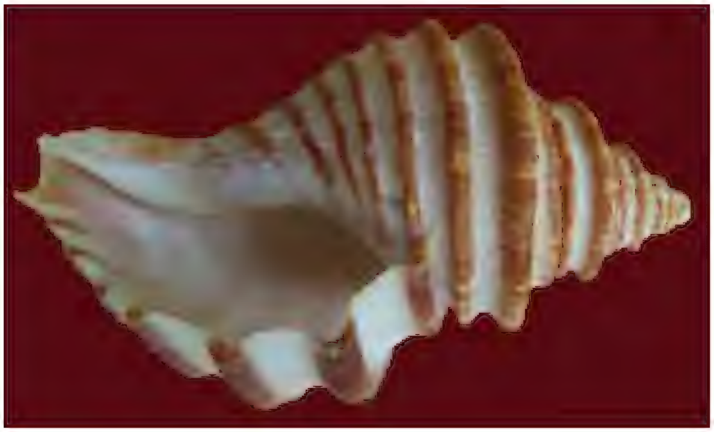


Fig. 6 Blue – Various shades of blue can look great. Avoid the bright ones, favoring very deep, toward black, baby powder, or gray, tones. Brown shells look especially nice on subtle blues. There are very few blue shells but those may tend to be minimized on this color. Dust on the lighter shades is less of an issue.



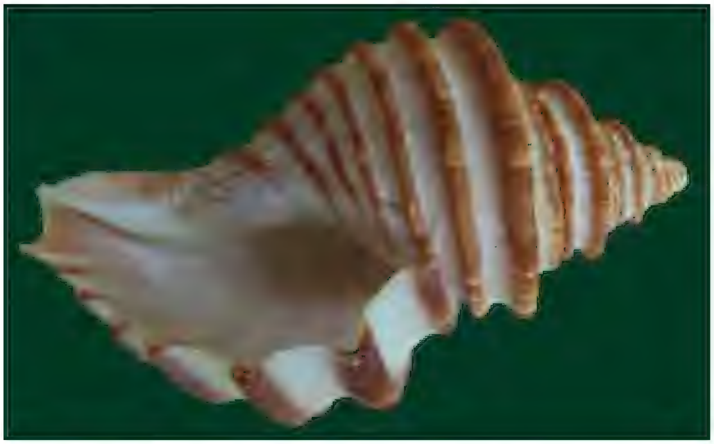


Fig. 5 Green – Use a muted green, not a bright forest green, as the latter can overpower the shells. White shells look especially nice on green. Green shells will appear dull on this color. Red shells may present a challenge as red is a complement of green and people with certain types of color blindness will have a problem with this combination.

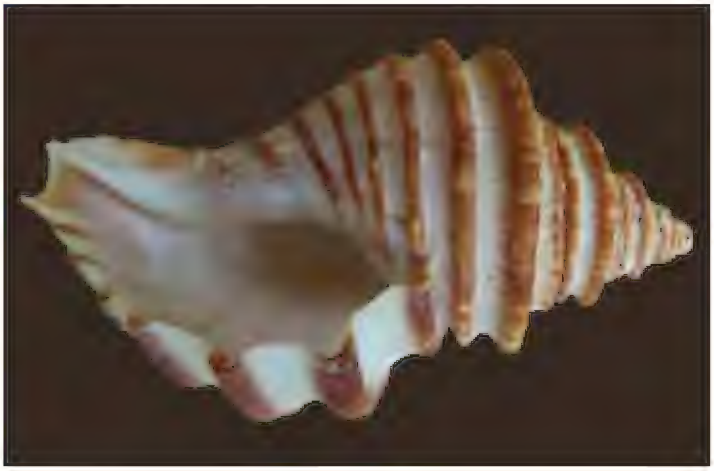


Fig. 7 Brown – Brown presents challenges but can be used successfully. A large percentage of shells are brown and will not "pop" on this color. Very colorful shells will look nice, especially green shells. White shells look good on the darker shades.

Fig. 8 Red – A royal color that will tend to overpower shells. It is a very powerful color that attracts the human eye, which is why advertisers use it. It is a complement for green, so shells that are green may look more vivid. Exercise great caution in its application if you select it. Remember, the background should complement, not compete with the subjects of the display.

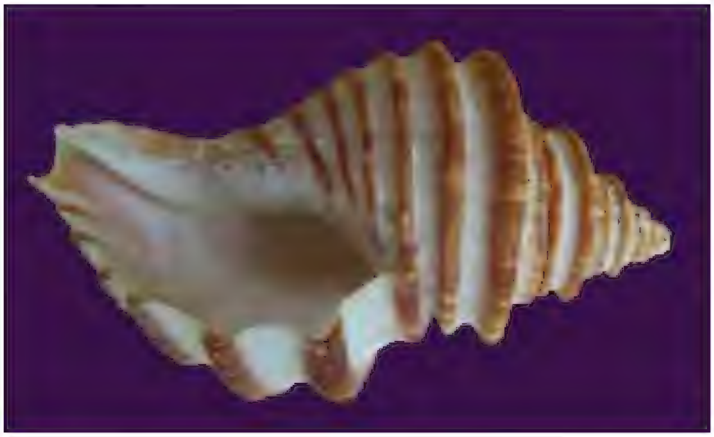


Fig. 9 Purple – Purple is another royal color and in most cases it is not a good choice. The exception may be for yellow shells. Yellow is a complement to purple and will tend to look vivid on it. A muted purple may make an exhibit showing yellow shells "pop." Exercise caution in its application.

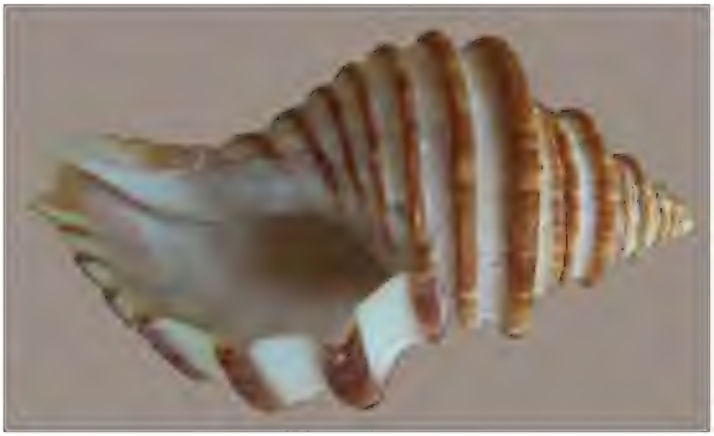


Fig. 10 Buff – A neutral color common to many linens. It mimics the sand of many beaches on which shells are found. Dust does not show well on this color and it presents few challenges for the various colors of shells. Its main drawback is lack of contrast to the shells, thus the exhibit may appear flat.

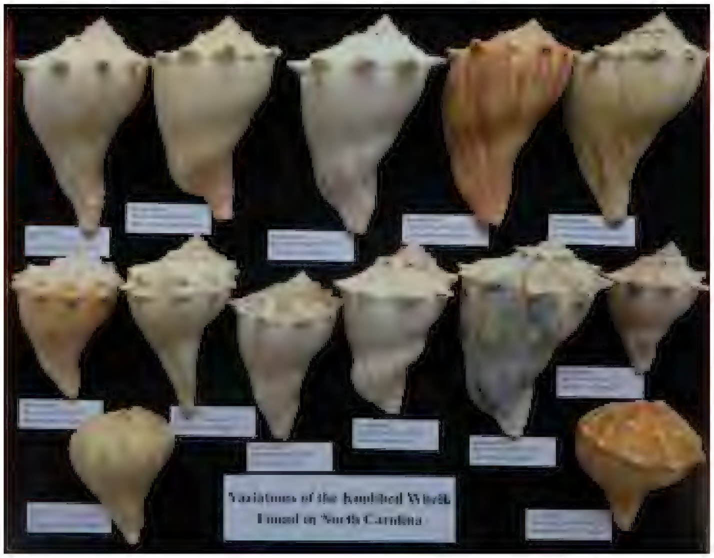


Fig. 11 An array of knobbed whelks, *Busycon carica* (Gmelin, 1791), demonstrating variations found in North Carolina. No two shells are the same, but this display is so full the eye has trouble focusing on individual subjects and the shells may tend to start looking the same. Cases can become overcrowded quickly unless care is taken to include only those shells that support the story.

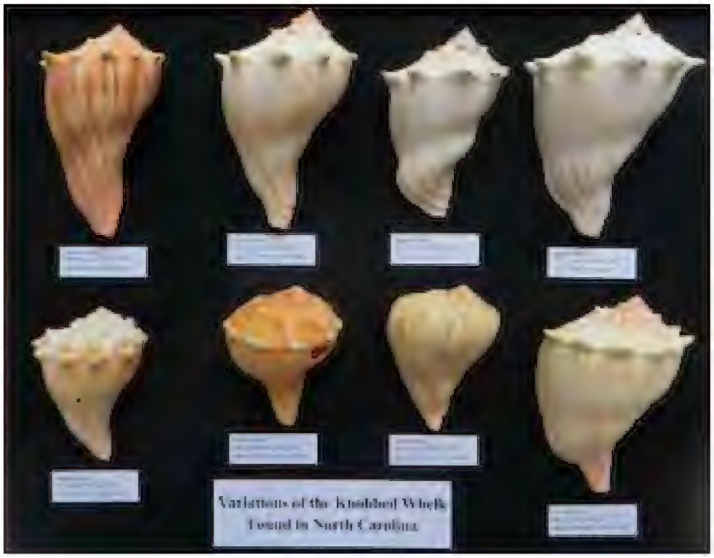


Fig. 12 An array of knobbed whelks, *B. carica*, demonstrating variations found in North Carolina. Selecting good representative shells demonstrating variations allows the eye to focus on individual shells. The selection allows space for labels. This layout does not profile all possibilities that are shown in the crowded case, but it does successfully convey the message that the species is variable. Additionally, a balanced exhibit helps the viewer gain a better appreciation for the beauty inherent to shells.

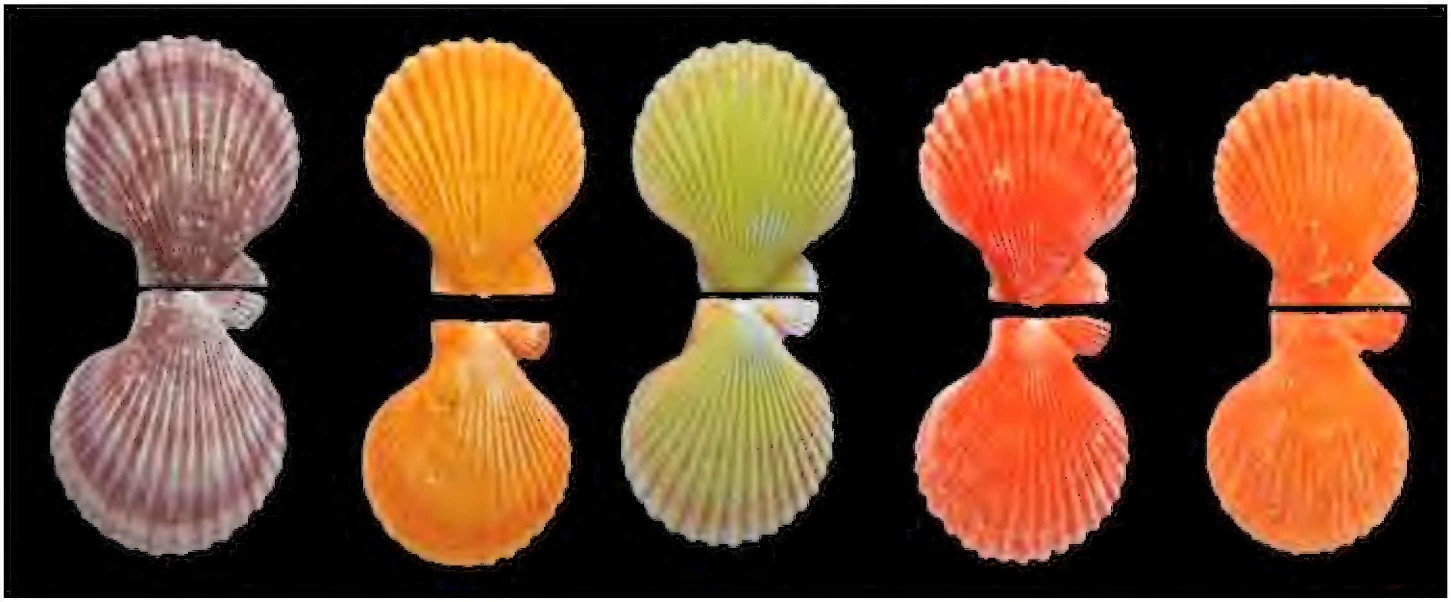


Fig. 13 Variations or groups of shells can be shown with photographs on a backboard. The same caution of overcrowding must be kept in mind. This is the austral scallop, *Mimachlamys asperrima* (Lamarck, 1819), which due to its vivid and varied colors, should be shown as a group to communicate the varied appearance of the species. What is typical? Brilliant yellow specimens command special attention, but displaying only a single form would misrepresent the species.

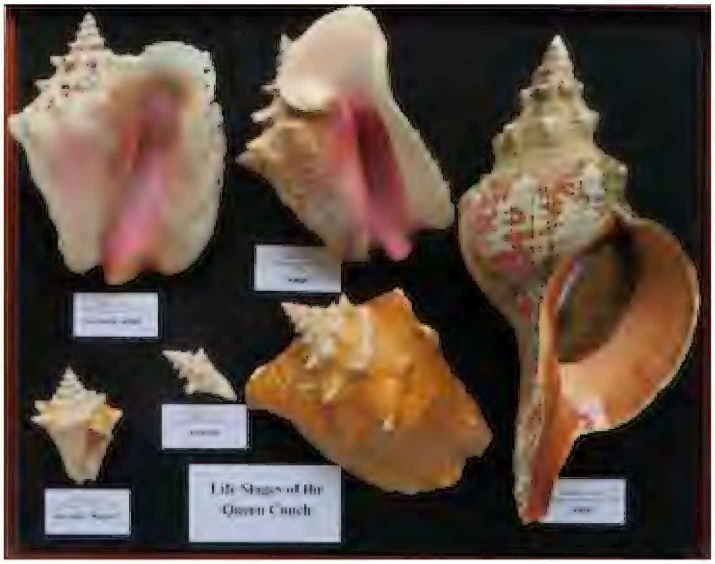


Fig. 14 Mission Creep? This exhibit includes several queen conchs, *Aliger gigas* (Linnaeus, 1758), with adult, juvenile, and very old shells. Including the Florida horse conch, *Triplofusus giganteu*s (Kiener, 1840), without context makes little sense. It is tempting to include as it was a very satisfying shell to recover when collecting the queen conch, but it does not belong in the story of the life cycle stages of the queen conch. The comparative impressiveness of the horse conch risks distracting the viewer from the profile of the queen conch life cycle.

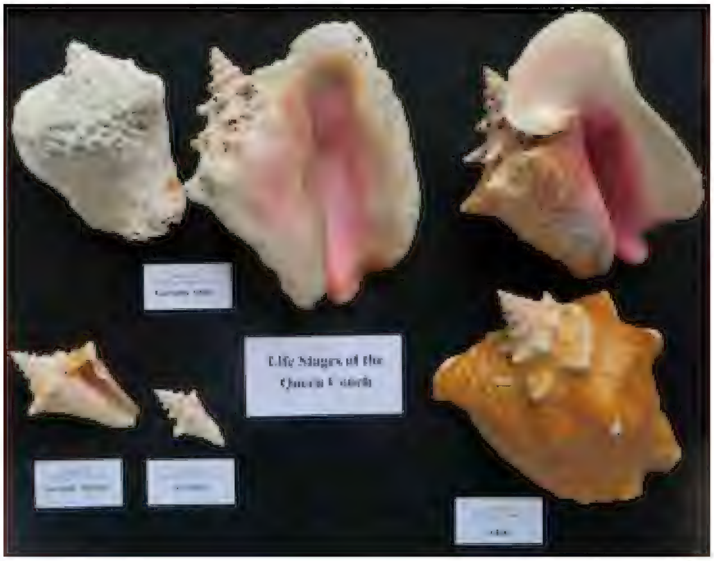


Fig. 15 Queen Conch Life Cycle. Omitting the horse conch allows inclusion of additional shells to better represent the subject and balance the display. One solution might be to include the horse conch in the exhibit via another case. When found, if the horse conch was in the act of eating a queen conch, including pictures of this activity would add to the story of queen conch natural history. Explain why it is there. Without context it has no place in the display.

Don't Crowd the Shells!

One of the greatest challenges I face in building an exhibit is which shells **not** to use. I almost never have enough cases to house every shell I want to include. Labels further limit space for shells.

I look closely at which shells are needed to tell the story completely and which ones are redundant or superfluous. It often involves omitting a favorite shell or two, which in reality add little to the story other than being a personal favorite. Put aside emotions and look at the exhibit objectively. Too many shells may satisfy the wish to show all your shells, but at the same time damage the presentation. Many shell shows have at least one category for a single shell entry. If a prized shell will not work in the exhibit there is another outlet to share it with your audience.

Stay on Topic:

While building an exhibit, new ideas will come to mind. Some may enhance the exhibit while others may add unnecessary baggage to the story. Carefully evaluate ideas that come to mind to avoid "mission creep." Does the addition enhance the story or add unnecessary information that will crowd the exhibit and at the very worst create confusion. How many cases you have at your disposal can be a determining factor as to including more ideas.

Another pitfall of embracing all new ideas that come to mind is that there may come a point where the exhibit will not be finished in time for the show. The exhibit has grown and includes more and more content delaying meeting the deadline. Keep it simple!

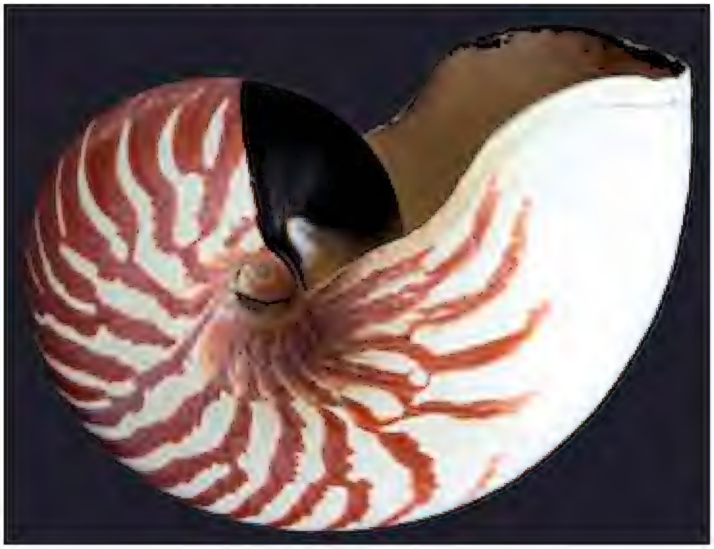


Fig. 16 If you display the New Caledonian nautilus, *Nautilus macromphalus*, everyone sees a chambered nautilus, but advanced collectors will appreciate the rarity of your selection.

Shell Selection:

Select the best shell for the job. Obviously the exhibit should include the best shells you have for the needs of the exhibit. I employ additional criteria that help determine the best shell is for my goal.

I select shells that connect to the general public and the advanced collector. The chambered nautilus *Nautilus pompilius* Linnaeus, 1758, is probably the most frequently seen molluscan species in books and general commerce. It is easily recognized by novice viewers. The New Caledonian nautilus *Nautilus macromphalus* G. B. Sowerby II, 1849, is far scarcer, but the inexperienced collector sees a chambered nautilus either way. If a specific species is not required I select the New Caledonian nautilus to represent a chambered nautilus as the general public will know what it is and it may please the eye of the advanced collector.

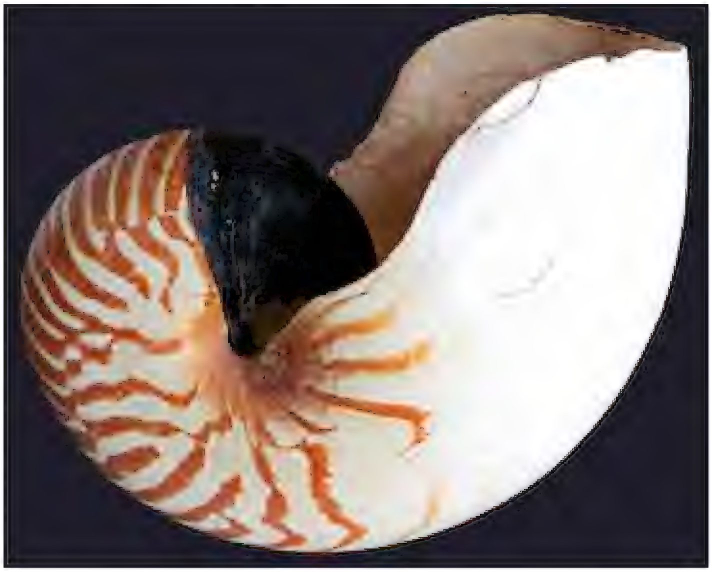


Fig. 17 On a different selection level, if *Nautilus pompilius*, needs to be used, the specimen shown here is one that was collected as a float shell and nothing more done to it. Polishing to make the shell brighter and attractive is a common practice where many of these shells are found. That this shell is completely as it came out of the water makes it a more natural, harder to obtain, scientific specimen. Again everyone sees a chambered nautilus, but the advanced collector sees an out of the ordinary chambered nautilus.

Few collections will ever be able to support such selection criteria in all cases, but when such can be made, seriously consider the option. Do be aware not to include an unusual shell simply to satisfy this advice, if it is not going to support the story.

Research:

Consider including photographs and field observations of mollusks. Photographs of the living mollusk, though not required, certainly enhance the presentation. The photographs provide evidence of and support research.

One should thoroughly research the subject. Record only what you observe. A good scientific rule of thumb requires that you do not add details not observed.

All exhibits require research. Listed here are some of the resources valuable to the development of an exhibit. Do not neglect even the most mundane appearing resource.

For example "The Golden Guide Seashells of the World" remains a good resource, if not the last word in research.

Books
Internet
Museums
Fieldwork
Collaboration
Field observation

Reference multiple resources, including ones that have the same information. Verification and familiarity with the information is important. Some resources may be listed as imperfect by some reviewers in their treatises, thus referencing several is a must.

Write a bibliography recording all of the resources used for the exhibit and include it with the exhibit. Be sure to include Internet sites that you may have used.

Even if you know the subject matter by heart and cannot remember where you learned it, find and cite reference for what you know. Everyone learned what they know somewhere. If you include information made through field observation carefully represent them. For example stating that the knobbed whelk eats bivalves may be a conclusion reached via direct observations. Including photographs of the mollusk in the act of such predation greatly enhances and supports that knowledge presentation.

Check Nomenclature:

Due to the possibility of a change of shell classification a stop at World Register of Marine Species (W0RMS): http://marinespecies.org/ to verify classification is a must. Though older publications such as the "Golden Guide" can still provide sound information, classification has often changed. Judges look for the most up-to-date classification in the exhibit labeling; so making sure classification is up to date is very important. Even a classification that has been the same for as long as you remember may have changed. Never assume anything in regard to this! An example is the lettered olive found in the Eastern USA. For decades it was classified as *Oliva sayana* Ravenel, 1834. A couple years ago, in the midst of preparing an exhibit for a permanent display at a children's medical clinic, assuming nothing, I looked at WoRMS to verify the classification only to be surprised it was now classified as *Americoliva sayana* (Ravenel, 1834)!

Beware of Autocorrect/Spell Check!

Autocorrect can damage the accuracy of your labels. Autocorrect can change a word by as little as one letter from a Latinized scientific classification into a word familiar to many. Either disable autocorrect or remain vigilant to what it may be doing while you carefully create labels. This issue, if not resolved may compromise the exhibit significantly. Following are some examples.

- Correct: *Oxymeri*s *maculata* (Linnaeus, 1758)
- Autocorrect result: *Oxymeris maculate* (Linnaeus, 1758)

Autocorrect changed the last letter of the species from an "a" to an "e." Caution: Changing it to read correctly once may not be enough to keep it that way. Cutting and pasting it into other parts of your display may cause it to revert to the autocorrected version.

Correct: *Oliva reticulata* (Röding, 1798)
Autocorrect: *Oliva reticulate*
The last letter of the species has been changed.

Correct: *Amoria hunteri* (Iredale, 1931)
Autocorrect *Amoria hunter*
The last letter of the species has been deleted.

Correct: *Alcithoe arabica* (Gmelin, 1791)
Autocorrect: *Alcithoe Arabica*
The first letter of the species has been capitalized.

Judging can be very close. A single typo, whether you, the exhibit builder, or the word processor produced it, being the tie breaker in some instances. More importantly, and to reinforce an earlier point, it is incumbent on us to not present incorrect information to our audience.

Proof read:

Proof read text numerous times. Ask someone to help. Read it aloud. Errors are easy to miss when writing. Spell and grammar check may not provide the correct word for your text. If possible I find it helpful to let it rest for a week then read it again.

Backboard Labels:

Limit written text. Few people are going to read "a book on a wall." A shell show provides a chance to see actual shells. Do not disappoint them. It's about the shells! That said, some text is generally needed to introduce the exhibit. Be very judicious in editing.

For backboards a brief overview printed in a large, easy to read, point size is much more likely to be read. The audience will be standing, reading from at least 4 feet distance. Numerous words printed in a small point size will soon tire the viewer if they have not immediately discounted an effort to try to read it at first glance. Include photographs, illustrations, diagrams, and maps - with text on each backboard. The mix loosens the format providing a place for the eye to rest.

Backboard Captions:

Write a description for photographs or illustrations that can stand alone as a story. Your audience may be a caption reader, skipping introductory overviews sharing space with the images. Images are the hook that draws the viewer's eye. They may also read text panels, but it is good to know that one's carefully crafted prose is not necessarily going to be read. Communicate the message efficiently and quickly.

Display Case Labels and Captions:

Place a label with each shell. A brief story via a caption can be included if desired. Numbering shells and having a key makes laying out the exhibit perhaps easier and allows fitting in more shells, but you risk giving the viewer whiplash. Their eyes have to dart back and forth from subject to key and may tire of the exercise. If your audience tires at any point in the presentation you risk losing them completely.

Create Correct Scientific Labels:

Before creating labels for the shells it is very useful to possess knowledge of how to do so in an accepted scientific way. An article written by Walter Sage, though penned many years ago, remains an excellent reference to correct writing of scientific labels. It can be found at: "Conchologists of America Bulletin" Vol. 15, No. 1 March 1987, pg. 16

Label Hierarchy:
(diagram caption)

(1) Knobbed Whelk (Female)
(2) *Busycon carica* (Gmelin, 1791)
(3) Collected at a minus .4 low tide, buried in mud with other *Busycon carica*, in front of oyster bar at the mouth of Simpson's Creek, Nassau Sound, Duval County, Florida, April 26, 2009 at 3 PM

Hierarchy is the order in which the labels are formatted.

(1) As my target audience is the average person who likes shells but may not know much about the subject, my first line is a language they will likely understand, a popular name; although to the professional scientist this is the least important information to include. Leading with the scientific classification is a nonstarter for those not conversant in it.
(2) The second entry is the scientific classification. No matter how you build labels, this must always be presented.
(3) The third entry is the collecting data. Though not as crucial to the label (**in a shell exhibit**) as the scientific classification, it is important as it reinforces that for a shell to hold scientific value, a record of where it was collected is of utmost importance.

You may emphasize aspects of the label you want to draw attention to via bold and or different print size. Whichever hierarchy you employ, be consistent throughout the exhibit.

Data:

Collecting or source data for a shell is crucially important to its value for science and must be included on the label to affirm you have adhered to this goal. The novice viewer may not read that far down the label, being satisfied with a popular name, but may decide they want to find one and read the full label to learn where it came from. Never make up data. You may have received a shell as a gift or found it at tag sale. Keying out the species can be done. Knowing where it was found is impossible.

The knobbed whelk occasionally produces an extra row of knobs (Fig. 18). These specimens can be especially prized. Wishing to enhance such a prize with data, if none is present, is tempting, but fake data is a disservice to the scientific community and other serious collectors. Beach collected shells are removed from the context of where the mollusk lived, but recording basic data remains important. Only one of the shells in this group has highly detailed collecting data. The larger specimen has none. Recording the range of the species is the limit of accurate data that may be included.

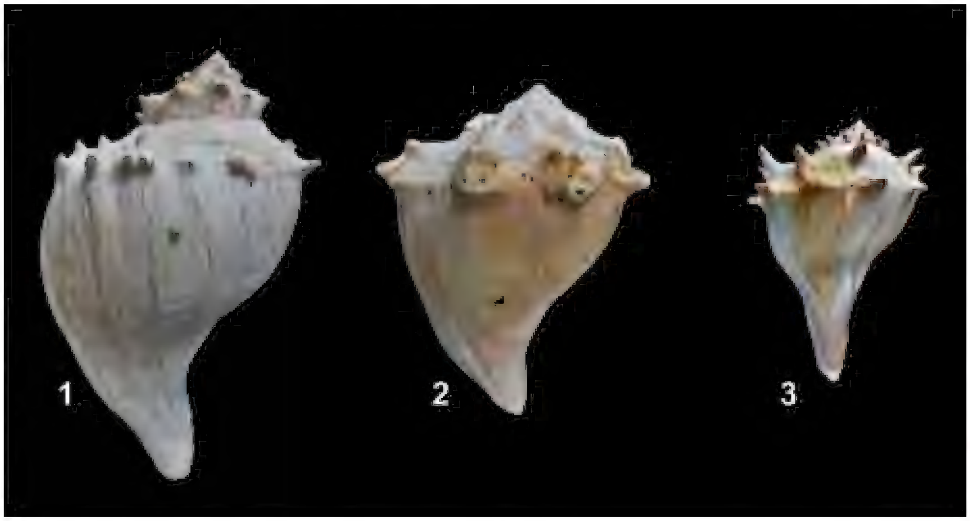


Fig. 18 Double knobbed group of knobbed whelks, *Busycon carica* (Gmelin, 1791) with suggested data slips.

1. Knobbed Whelk, *Busycon carica* (Gmelin, 1791)
No data: Range Cape Cod Massachusetts to Northern Florida

2. Knobbed Whelk, *Busycon carica* (Gmelin, 1791)
Collected dead on ocean facing beach, Shackleford Banks, North Carolina, USA, Winter 2005

3. Knobbed Whelk, *Busycon carica* (Gmelin, 1791) female
Collected at minus .4 low tide, buried in mud with other *B. carica*, in front of oyster bar at the mouth of Simpson's Creek, Nassau Sound, Duval County, Florida, (USA) April 26, 2009, 15:00 hours.

Type:

Point size is the size of printed text. There is a happy medium where a label can be easily read but not compete with the shell. Generally, labels should be readable from a minimum distance of 36 inches, or a standing viewer looking at an exhibit on a standard 29 inch tall banquet table.

Try 14-18 point size as a starting point: 14, 16, 18. Remember, many in your audience may have corrected sight where a small point size is more challenging to read.

Adhere to the format you select for labels. Changes in hierarchy are distracting. Variations in font and or point size produce the same distraction. A label is a constant, where detailed information can be found without adjusting for anything else. There is balance that can be struck between making the labels easily read yet not overpowering to the objects they are describing.

Selecting Font:

Use a simple font that converts well to italics, providing a distinct visual difference. Do not employ a decorative font, as that distracts from delivering the information. Underlined print is the printer's message to italicize. This was widely used in exhibits before the advent of word processing computers and inkjet printers. It can still be employed, although I find it very desirable to use a computer and printer as the labels are more polished and professional in presentation.
Following are a few font options:

Times New Roman regular case – *italics* Times New Roman is a traditional print font. Italics appear distinctly different.

Calibri regular case – *italics* Calibri is a common default font employed by word processing programs. The difference in italics is subtle.

Arial regular case – *italics* Arial is simple clean font often used in presentations.

Guard against the word processor reverting to a default font if you have selected a different one. While creating entirely new text the program may select its default font, not the one you have been using for all prior text.

Include diacritic marks (umlauts, accents, etc.) as necessary to the author name (e.g. Röding, Récluz, etc.). Not all keyboards have intuitive functions to make diacritic marks such as accents and umlauts. These can be produced with a series of key strokes or using the symbol menu. An Internet search will yield how to do this for your computer. At the very minimum, carefully add accents with black ink to the printed label.

Label Style:

There are many ways of producing labels. I prefer one where the label is easily read, but does not outcompete the shell it is describing. How you create labels is a matter of preference. Many different styles routinely win top honors at shell shows.

Regardless of label style, a universal factor is that labels must lie flat. Curled edges and or the entire label bent are undesirable. Be aware that the environment at the show may be different than where you assembled the exhibit. What lies perfectly flat while assembling the exhibit may suddenly curl at the show! You may need to affix the labels to card stock or other stable, rigid substrates to assure they will stay flat.

Orient your labels in the same way when deployed in the exhibit. Multiple orientations tend to make them a focal point rather than a standard easily referenced place to learn about the shell(s). An example may be to place a label at an angle different from others to assure the viewer knows it goes with a particular shell. The result of the label being positioned differently calls attention to itself at the expense of the shells.

Quality of the Shells:

For many exhibits one wants the best possible in quality of the shells. The more attractive the shells, the more attention the exhibit attracts. Broken and or damaged shells should generally be avoided. For example, if your favorite shell of a given species has a badly chipped lip and a smaller specimen is flawless, the smaller shell is the better choice for the exhibit.

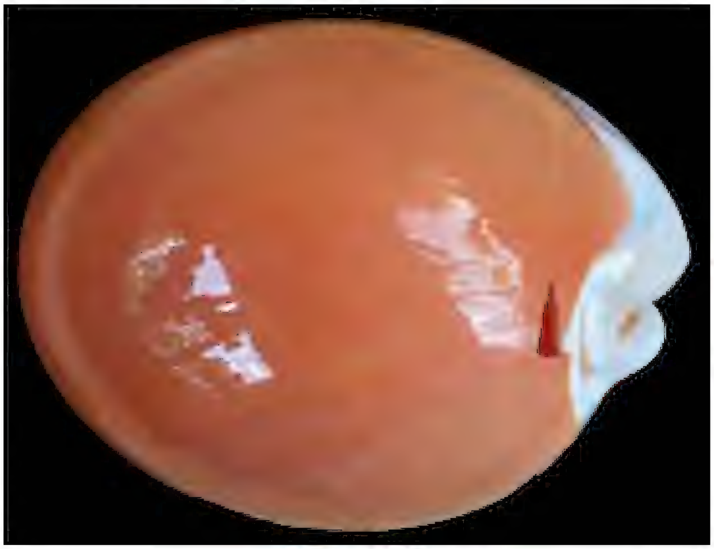


Fig. 19 A broken shell, *Callistocypraea aurantium* (Gmelin, 1791). At first glance this golden cowrie is a stunning example for the species. It is large and of superior color. A hole and associated cracks in the spire of this shell, caused by an accident in handling, ruins it.

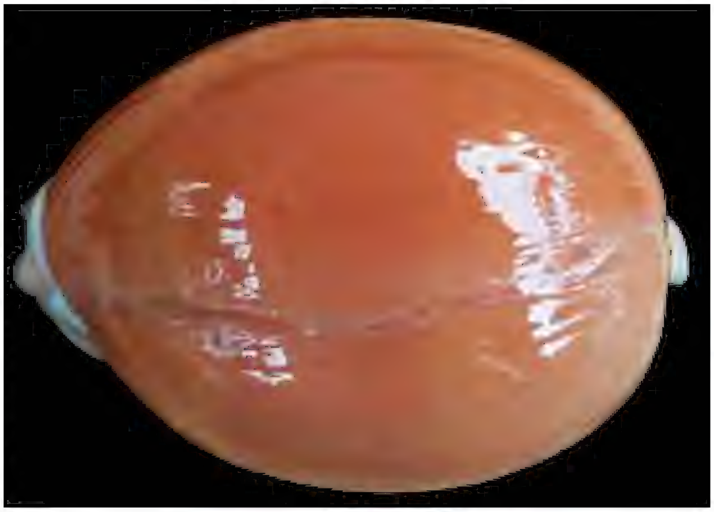


Fig. 20 Growth mend, *C. aurantium* (Gmelin, 1791). A golden cowrie with a natural scar. A feature many viewers would just as soon not contemplate.

Growth Mends:

Growth mends record an injury the mollusk survived. While a fascinating record of a test to the animal's wellbeing, it often interferes with the appearance of the shell thus reducing its show quality. A mollusk that lived its life without ever suffering an injury may be an exceptional shell by virtue of its perfection..

Size Does Matter (to an extent):

Despite comments I hear to the contrary, exceptionally large and perfect examples of a given species garner particular attention. Perfection is important to the equation. Some extra-large shells are not exactly perfect (to put it gently), thus not a good choice to represent a species. If you are lucky enough to possess a giant shell of exceptional quality, its scarcity factor and desirability is greatly increased making it a prime candidate for inclusion in the exhibit.

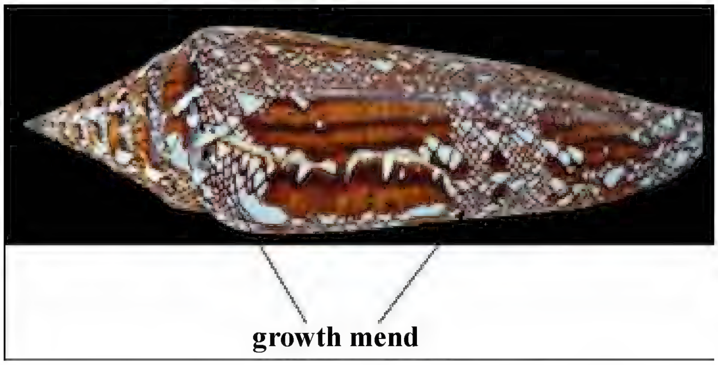


Fig. 21 Growth mend on *Conus bengalensis* (Okutani, 1968). The markings of some shells may help render a growth mend inconsequential to the overall presentation.

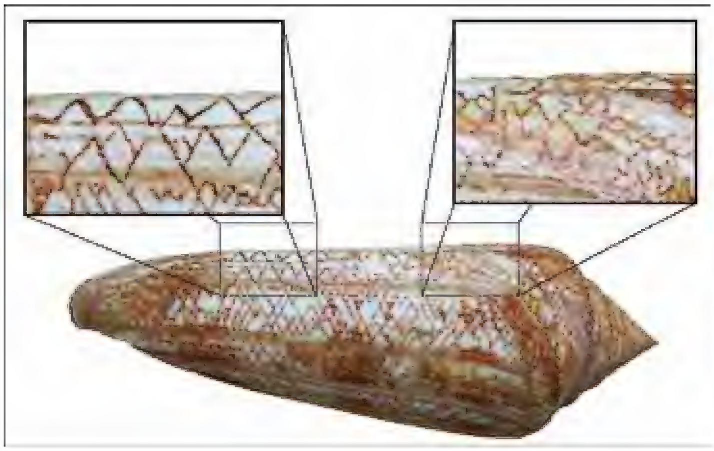


Fig. 22 Repaired *Conus gloriamaris* Chemnitz, 1777. Enterprising fishermen may dress up a shell that has damage or scars, to yield greater apparent value. This glory-of-the-seas cone at 141mm (a scarce size for the species) has had growth mends repaired and painted to resemble the surrounding shell. For exhibit quality a smaller, more perfect shell is preferable. A visible growth mend is preferable to a "doctored" one, if it cannot be avoided. The shell shown here verges on forgery.

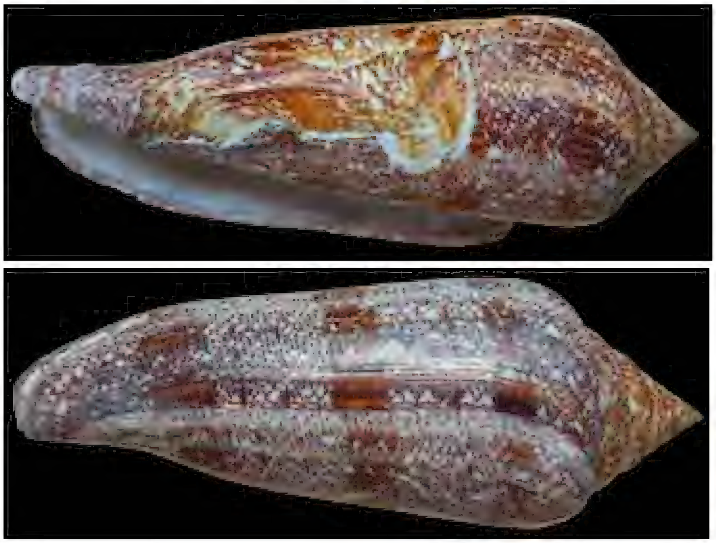


Fig. 23 A *Conus gloriamaris* with a nasty growth scar. Strategic positioning of a less than perfect shell can be employed to include a shell that might tax one's budget to purchase a perfect example.

Show the Best Side:

The *Conus gloriamaris* (above, Fig. 23), at 126mm, is a scarce and desirable size. The dorsal side presents as a spectacular shell, while the reverse has a massive scar. This growth mend significantly disrupts the shell presentation. This shell is one many collectors would never include in their collection, much less in a shell show. It cost less than one tenth that of a perfect specimen, making it affordable to a collector who might not be able to consider using a large example of the species in a display. Display it damaged side down. Do not advertise that it is perfect, unless the message includes a comparison similar to what is outlined here or as an example showing the incredible vitality of a mollusk recovering fully from a serious attack by a predator.

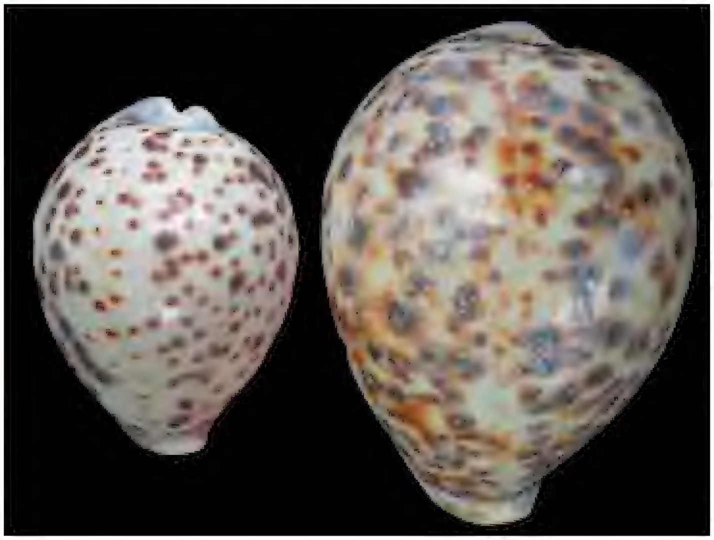


Fig. 24 Two white form tiger cowries illustrating that quality may very well be more important than size in selection for display.

Quality of the shells has bearing on selection for display. To illustrate, two white form tiger cowries are compared (Fig. 24). The larger shell, *Cypraea tigris schilderiana* C.N. Cate, 1961, at 130mm, is certain to grab the attention of the average viewer who will recognize it as a gigantic tiger cowrie, while holding the attention of the knowledgeable collector recognizing the scarcity of specimens of this magnitude. The smaller specimen, *Cypraea tigris pardalis* Shaw, 1794, measuring at a comparatively smaller size of 77mm is superior in quality. Thus to represent the white variation of tiger cowrie, the smaller specimen is likely the better choice.*

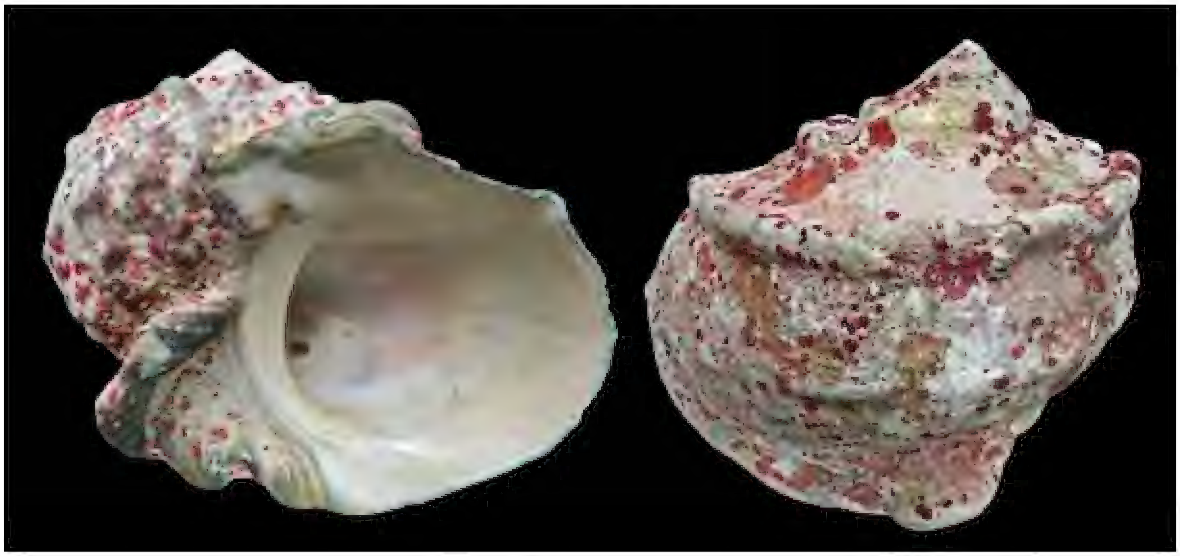


Fig. 25 ***Turbo marmoratus*** **Linnaeus, 1758. This specimen is as they often appear when collected. Old specimens can be heavily encrusted with marine growth.**

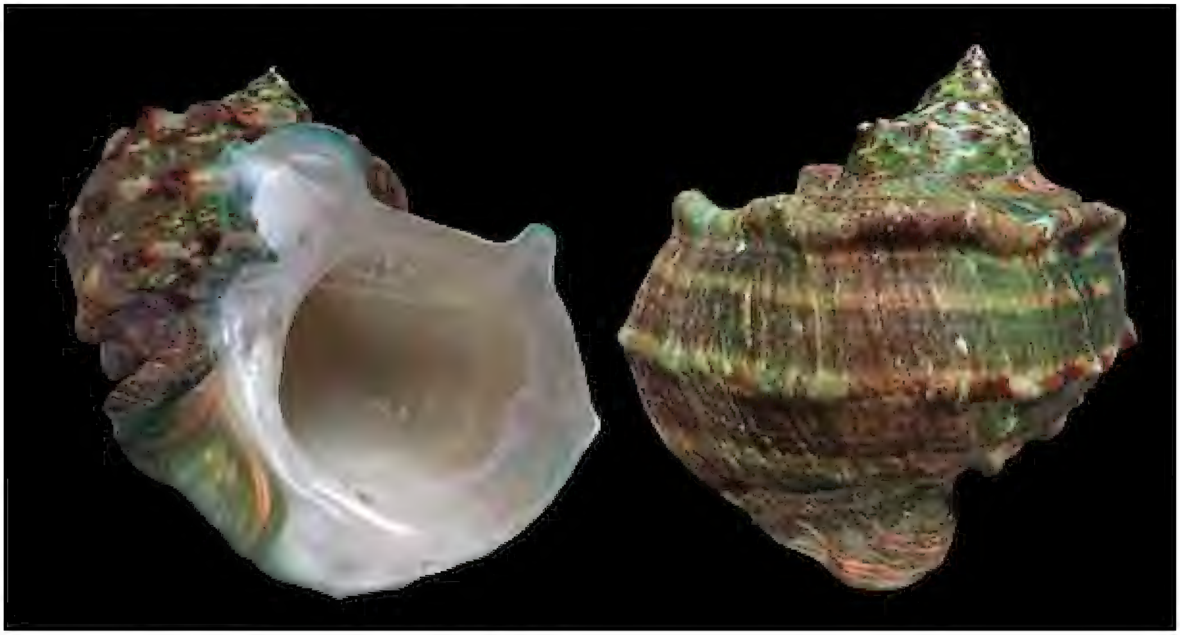


Fig. 26 ***Turbo marmoratus*****. This specimen is what lay beneath the encrustations. Showing it both as found and what lay beneath the marine growth is an informative story, one that requires inclusion of an "ugly" or uncleaned shell.**

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*Author's Note: This example presents a different challenge. That is what classification to use. I follow WoRMS. Using a giant Hawaiian tiger cowrie and a tiger cowrie from the Philippines may be a poor example to illustrate the challenge of using a giant shell verses a finer but smaller one. To my target shell show audience they are both tiger cowries. This also illustrates the potentially difficult choice not to use a shell due to poor quality despite it being a certain attention grabber by size.

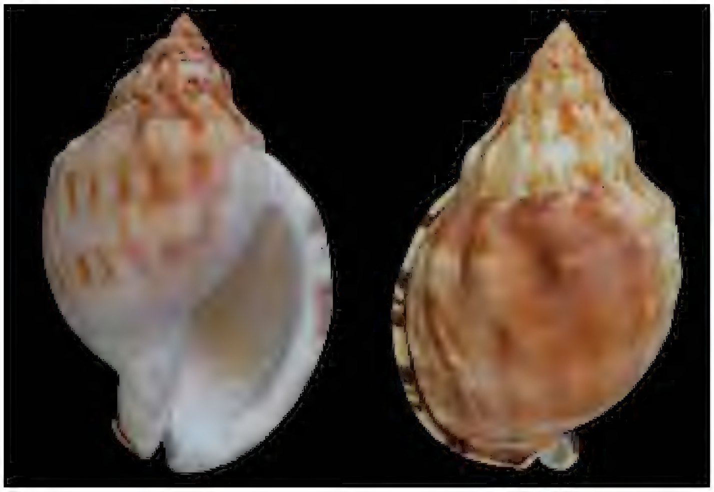


Fig. 27 A dead collected shell, Roy Bell's Bonnet, *Semicassis royana* (Iredale, 1914), is an example of a species rarely, if ever, taken with the original mollusk intact. These shells are typically collected with a hermit crab as occupant. The crab enters a crayfish pot set in deep water. The hard ground habitat precludes employing a trawl or dredge in an attempt to bring up a specimen with the original mollusk. The goal in this instance is to employ a specimen that is as fresh dead as possible. Author's note: I selected this shell as it fits the profile but also to reinforce the point of "Shell Selection" outlined on page 34. We are looking at a large bonnet type helmet. To the experienced collector we are looking at a species not often represented in collections. I was blown away by the first one of these I ever saw!

All shells do not have to be "perfect":

To support the story, a less than perfect presentation may be desirable.

Dead Collected Shells:

The decision to employ dead collected shells provides a complicated answer. For the most part, exhibitors include live collected shells as they present the optimum quality in the shell. The colors are the best and the lines of the shells crisp and sharp. That said, do not rule out dead taken shells. Some collectors, who as a rule never collect a living mollusk, mount excellent and award winning exhibits. In some instances even the most dedicated collector stands little chance of obtaining a live collected specimen of a particular species as they are simply unavailable. In this instance a dead collected specimen, while not meeting the criteria of the best of the best, is a necessary reality. Conversely, consider using fresh dead shells to show juveniles. Responsible collectors try not to take living juveniles. Growth series are an especially good reason to use dead collected shells as the display may include numerous juvenile specimens, an action judges may frown on.

Setting up the exhibit at the show:

Transporting the exhibit to the show presents challenges that are easy to overcome with planning. Many people transport their exhibit in the case(s) by laying a soft cloth or towel into the case on top of the content. Upon arrival, all one has to do is carefully lift the cloth, straighten everything, and it is ready to go.

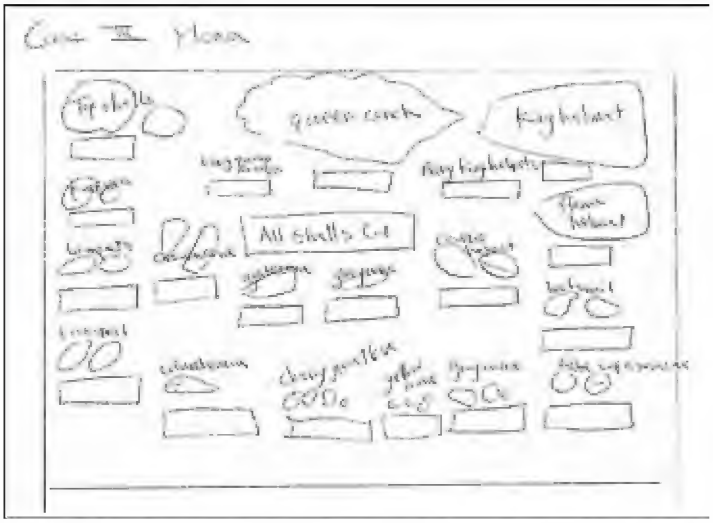


Fig. 28 A thumbnail sketch I drew mapping a case layout. Note: The case included shells collected at Mona Island, Puerto Rico. The advent of digital photography and smart phones allows the exhibitor to sidestep a thumbnail sketch. Take a picture of the exhibit before you pack for the shell show.

My approach is to completely assemble the exhibit at the show, as my cases do not work for the transport intact method. I make a thumbnail drawing or take a picture of the layout before packing it for the show so that I have a map for show installation.

The show will rarely have extra space for you to work on your exhibit, aside from that space which you need for the exhibit. Be prepared to work in your designated space and or the floor immediately in front of it. Never place your supplies on a neighboring exhibit space.

Bring with you supplies used to assemble the exhibit so that, if for example a label falls from a backboard, you can do a quick field repair. Remember cleaning supplies.

Lint rollers for clothes are handy for removing dust or sand that may have been introduced to the cases in transport or fall out of that shell you thought was completely free of such material.

Accidents such as broken glass are unfortunate and usually impossible to correct in the limited time before judging begins. The judges understand this. During judging you can purchase a replacement so that the display will be protected when the show opens to the public.

Finally, have fun! As I stated earlier, my goal is to assist shell show exhibitors with some ideas and strategies I have found successful. Whatever works for you. Make it **your** display.

John Timmerman
NJredstone2gr@hotmail.com

Conchologists of America Board of Directors (BOD) 2020 Minutes electronically submitted due to cancellation of 2020 COA convention incidental to the Covid-19 Pandemic

BOD: Harry G. Lee: President, José Leal: Immediate Past President, Karlynn Morgan: Vice-President & Website Coordinator, Steven Coker: Treasurer, Amelia Ann Dick: Secretary, Linda Powers: Membership Director, Everett Long: Trustee & *Neptunea* Award, Tom Eichhorst: Editor, *American Conchologist* (*AC* hereafter), Vicky Wall: Awards Director, Donald Dan: Endowments Director, Anne Joffe: Convention Coordinator, Bruce Neville: Member-at-Large & Indexing Committee Chair, Tom Ball: Member-at-Large

GUESTS: Alan Gettleman: Historian and Jann Vendetti: Academic Grants Chairwoman

2019 COA BOD Minutes, Amelia Ann Dick – Secretary

After all committee reports were submitted and reviewed by President Lee, Amy Dick electronically emailed the final draft to the Board of Directors on November 29, 2020. President Lee called for a motion to accept the minutes as written. Motion to accept the 2019 minutes carried. Also, on July 19, 2020, I wrote and mailed thank-you notes to all COA 2019 Chairs, Auctioneers, Treasurer, and Tina Neville.

GUEST: COA Historian's Report – Alan Gettleman

Report was electronically submitted on July 23, 2020. "History matters - even to shellers. Our evolution from a small group of individuals has grown into a unique treasure for the history of shellers. Over the past fifty years, our members include shell collectors, citizen scientists and professional malacologists.

"Years ago, our only active charter COA member, Bob Janowsky, gave a talk to the Astronaut Trail Shell Club. He gave a unique and superbly valuable personal account of the very first COA meeting. Our club request was just to have Bob talk about "being there in the beginning" (a great title for a book.) Bob also gave a more chilling reality check that other natural history amateur groups such as fossil folks and gem and mineral shows are very popular, while we are struggling at recruitment for our valuable and interesting body of science. I hope to have Bob talk at COA 2021 about this topic.

"I anticipate using the Covid-19 isolation time to review all early COA secretarial files in order to document the entire history of COA. These files are conveniently, although temporarily, being housed in Orlando. COA has only the very first yearly meeting minutes of its early years."

COA Treasurer – Steven Coker

Report was electronically submitted on 11/9/2020. The Statement of Accounts showed total cash assets on January 1, 2020, as **$367,949.56**; total receipts were **$91,116.59**; total disbursements were **$53,219.73**. At the end of the year, total cash assets were **$405,846.42**.

Vice President & COA Website Coordinator – Karlynn Morgan

Report was electronically submitted on July 31, 2020. "Our relationship with Mark Carillon of Web904 in Jacksonville, Florida, continues to flow very smoothly. I am well-pleased with the quality of work we receive from them with almost same-day service on website updates. Allan Anova, their liaison with us, is a very accomplished provider and communicates quite thoroughly with me and Vicky Wall. Due to our heavy involvement with the site, we continue to keep our costs low with Allan.

"To date, Vicky has not had difficulty adding her updates for shell show and like events. I have added many critical items including new information regarding the new Lifetime Achievement Award, the recipients of the *Neptunea* Award, updates on the Cancellation of the COA Convention, and last - but not least - the complete Indexing Project spearheaded by Bruce Neville. All of these additions to the web page have also been announced to the membership, and the public in general, via Conch-L and our Facebook presence online. At Harry Lee's suggestion, I have changed the Page Curators to myself and Vicky Wall, as we do most of the work involved in maintaining the site.

"I am also currently working on a very large file of photographs from the Sanibel-Captiva 2019 COA Convention which I hope to publish on the website soon, along with identification of people in the photographs. Identification is the difficult issue. Thanks to Alan Gettleman for providing the CD of photographs for this purpose. Once again, I invited everyone to give the website a critical look to see if there is anything you would like to see changed or added.

"On August 4, 2020, I contacted Leslie Crnkovic by email asking if he would be in charge of the 50th Anniversary

Pin Project, which we will celebrate in Galveston – 2022. This pin will be a one-time only limited edition. He will put together a set of rules to be published in *AC* to be reviewed by Amy Dick and myself for a poster contest to be held at the 2021 Astronaut Trail (Melbourne) COA Convention where the attendees can vote on a new pin concept which will submitted for design by our pin company. Leslie emailed back the same day and said he "would be honored to take part in this momentous activity."

COA Awards Director – Vicky Wall

Report was electronically submitted on May 1, 20290. "In 2019 there were 11 domestic shell shows and 4 international shell shows receiving a COA Award. We gained two shell shows for 2019 to receive the COA Trophy - Sea Shell Searchers of Brazoria County and Texas and Jersey Cape Shell Show. Sadly, the Philadelphia Shell Club announced they would no longer have a shell show. Additionally, the COA Trophy Guidelines and Sound Judging Practices are posted on the COA website. Paper copies of those documents are included with each COA trophy sent to shell clubs. I also include attachments in the emails that are sent to the various clubs when requesting their shell show information.

"The *Neptunea* Award process is currently under the directorship of Everett Long. I relay the number of plaques required to Fred's Award World. The cost is included in the Awards Committee Accounts. In 2019, there were two *Neptunea* Awards presented. Recipients were John Timmerman and Gary Schmelz.

"During the year, I also gather information from various shell shows and gatherings in the U.S. and around the world. This information is posted on the COA webpage under the Events tab. And, two lists, one for Fall along with an additional list for Spring, are sent to Tom Eichhorst for publication in the *AC*."

COA Academic Grants Program – Jann Vendetti

Report was electronically submitted on June 24, 2020. The COA Grants Committee consists of Jann Vendetti, Andrew Kraemer and Jinghchun Li. In 2019, there were 15 academic grants awarded in a total amount of $25,844.00. Donald Dan and Harry Lee edited the report. Jann's complete report is published in the June 2020 *AC* on page 35.

Endowments Committee Director – Donald Dan

Report was electronically submitted on September 21, 2020. "In 2019, the total endowment receipts were **$46,370.00**. The massive Frederic Weiss Collection gifted to COA by Emily and Susan Weiss in October 2016, continued to generate proceeds to add to the COA Endowments, mainly by way of auction sales of donated shells. By the end of 2019, the gross proceeds from the disposition of the Weiss collection totaled **$176,193.30**. There are still some shells left for future silent auctions, but nothing left for oral auctions as far as I can determine. COA is very blessed with a team of volunteers in organizing the disposition of this collection. John and Cheryl Jacobs have successfully managed the numerous silent auctions. Everett Long has masterfully conducted the oral auctions. Ed Shuller has creatively posted auction previews on the COA web page. Most of all, John Timmerman, has devoted countless hours of imaging and composing our very attractive color catalogs.

"I produce an annual edition of the "COA Grant Donation Program" brochure for general distribution. It lists individual grant recipients, their project titles, named awards and amounts for the current year's grant cycle. The brochure also spells out the guidelines of our grant donation program and donation contact information. In addition, I have coordinated the physical production of the *Neptunea* Award plaques; coordinated and produced the tri-fold flyers to publicize our annual conventions and have co-authored the guidelines for the COA *Lifetime Achievement* Award. This new award, created in 2019, honors long time volunteers who have taken an active leadership role on the COA Board. Doris Underwood was declared the first recipient and was notified by Alan Gettleman. The backstory about Doris was printed in the June 2020 *A/C.*"

COA Convention Coordinator – Anne Joffe

Report was electronically submitted on May 2, 2020. "The 2019 Captiva Birthday Celebration of R. Tucker Abbott's 100th birthday was a hit, not to mention it had one of the highest numbers of registered attendees. Financially, it was also a big success. We had a fantastic committee who worked endlessly and were so dedicated - **my thanks to them all**. Tucker's two children, Cynthia and Robert, were so impressed at how much their father meant to so many of us. They said it was the nicest tribute any child could see for their parent, and were so appreciative to all of us. The piano concert by Silvard Kool was the frosting on the birthday cake. He was terrific, and told me several times since how much he loved being able to be a part of Tucker's life celebration.

"After much work with the Hilton Melbourne Hotel, we were very fortunate to be able to move the next three meetings up a year. I believe that by doing this, many more people will attend the 2021 convention since they missed a year. The dates for the Melbourne Convention are June 16 through June 20, 2021.

"Dave Green and I are working with Moody Gardens in Galveston for COA 2022. Those dates are May 30 through June 4, 2022. The Wilmington Hilton dates are May 30 through June 4, 2023. It then needs to come back to Florida. A couple of clubs have listened to my plea, but with the year being 2024, it is way too early for them to give a commitment. Let's get through the next few years and we will go from there."

Indexing Committee Chair & Member-at-Large – Bruce Neville

Report was electronically submitted on July 30, 2020. "On July 17, 2020, a single, comprehensive index to all 47 complete volumes of the *Conchologists of America* Bulletin and *AC* is complete and posted to the COA website. Issues from #1 to 24(4) have been re-indexed by myself & Tina Neville and merged with the index produced last year. Additionally, Vol. 47 (for 2019) and COA special publications were "included in the index." The index will be reissued each year with the completion of each new volume of *AC*.

"We have called the final index, *COA Special Publication* no. 4. As in the previous document, there are four indexes: molluscan taxa, people and organizations, geography and general topics (i.e., "other".) The index is intended for electronic publication as a searchable pdf only; a print publication is not intended, as the document is 260 pages long.

"I would like to thank the initial committee members, Amelia Ann Dick, Tom Grace, Harry Lee, and Ed Shuller, for their work on the initial index. Their work was done carefully and accurately. No committee chair could have asked for a better committee. I want to thank my sister, Tina Neville, for assistance with indexing the earlier volumes and doing the "heavy lifting" of merging and alphabetizing the resulting files. I want to thank Anne Joffe for assisting with disentangling the Gordian knot of confusing names and multiple spellings. I also want to thank Alan Gettleman for helping with historical information and providing me with a copy of Lucy Clampit's *Twenty-year History*."

AC Editor – Tom Eichhorst

Report was electronically submitted on July 30, 2020. "The COA journal, (*AC*), continues as a quarterly publication of between 44 and 52 pages. Page count depends upon the amount of material available. The journal does enjoy support from well-known molluscan authors as well as COA members describing collecting trips and such.

"The journal continues to be printed (and well-supported) by Johnson Press of America (JPA), Pontiac, IL. We changed printers several years ago because JPA could offer a substantial cost savings and superior quality. They are now also responsible for packaging and mailing each quarter's issues, and this has worked quite well.

"Linda Powers stepped up and volunteered for Membership Director position, which also means she now keeps the COA membership addresses up-to-date and mails the most recent address labels to JPA prior to each issue going out. Amelia Ann Dick continues as Advertising Manager, even with her position as COA Secretary! Thanks to both of you for your willingness to perform necessary but less-than-fun jobs for COA.

"Bruce Neville of College Station, TX., continues as the final reviewer of the journal (as well as compiling the COA Index.) He not only 'chases commas', but fact checks and ensures we use the correct scientific terminology.

"Steven Coker handles the funding for this effort, ensuring the proper funds are available in an on-time manner. All-in-all, a team effort to produce and disseminate a quality publication recognized around the world. **I thank you all**."

***Neptunea* Award Coordinator & Trustee – Everett Long**

Report was electronically sent on May 2, 2020. "We had eight members send in nominations. Some sent more than one nominee and some nominees got more than one nomination. The end result was seven members became eligible for the award. After some discussion, the first ballot was taken. Ed Shuller and Jeannette Tysor were selected based on their service to COA. There was a three-way tie for a second award and, therefore, another ballot was held. Paul Callomon was selected on the second ballot based on his service to the scientific interests of COA.

"Our President congratulated each recipient with a personal phone call. An announcement was made on Conch-L, our COA website, COA Facebook, and an email by our membership chairperson on her mailing list. A notice of the recipients was written and submitted to the editor of *AC*. It was printed in the June 2020 issue along with a notice for 2021 nominations. The physical passing of the 2020 awards will be held during the 2021 Convention along with the 2021 recipient(s)."

Membership Director – Linda Powers

Report was electronically sent May 2, 2020. "Membership numbers continue to decrease as our membership ages. The 2020 membership totals are as follows: Our domestic membership is 448 with international at 60. We gained 23 new members which brings the total 2020 membership count to 508. To see if new members could be accrued, I obtained the registration roster for the convention and compared it to the COA membership database. I sent a letter to the non-members extolling the virtues of COA membership. There were 65 attendees who were not members. As a result of my letter, 12 became members.

"In addition, I also had a 2020 membership "blitz" at one of the first Englewood Shell Club meetings and provided the membership packet on the spot. That resulted in 7 new members and 16 renewing members."

Nominating Committee Report – Henry Chaney

President Lee thanked the members of the Nominating Committee consisting of Henry Chaney, Rick Edwards and Linda Brunner. The Committee was impaneled on June 21, 2019 at COA Captiva with the following nominees:
President: Karlynn Morgan; Vice-President, Everett Long; Secretary: Amelia Ann Dick (incumbent); Treasurer: Steven Coker (incumbent); and Trustee: Bruce Neville
A majority Committee vote was reported to Harry Lee in April, 2020. Due to COVID-19 and cancellation of the 2020 COA, this election has been postponed until the 2021 business meeting in Melbourne, Florida.

Respectfully submitted by Amelia Ann Dick
COA Secretary.

Update on COA 20/20

The Sheller's Family Reunion

Alan Gettleman

Registrations for the COA 20/20 Return of Human Space Flight and the COA to the Florida Space Coast show a good initial response as well as reservations for the Hilton Rialto in Melbourne, Florida. We are optimistic that we will be able to have a convention in June. Florida has already reopened major attractions such as Walt Disney World, Sea World, and Universal Orlando, with social distancing and other health precautions. The space program continues in full launch mode with manned and other launches, and we hope for a space launch around convention time. Unfortunately, it appears the cruise industry may not get approval to resume cruises from the Cape Canaveral port before our convention.

Registrations and latest information can be found on the COA website at https://conchologistsofamerica.org/ We can answer specific questions by contacting lychee@cfl.rr.com.

The convention begins with a tour of the Kennedy Space Center on Monday, June 14. Your local club guide will be a NASA retiree who worked on several Space Shuttle missions, including the two flights that included mollusks, and the Mars Pathfinder mission with the series of landers that culminated with Perseverance in February. We have a Harbor Branch Oceanographic and McLarty Treasure Museum tour on Tuesday, June 15. Both are full day tours. We hope to have evening turtle hatching tours on those evenings, but we will not find out until later if we can receive reservations for those spectacular oceanside events.

The convention begins at 1 pm on Wednesday, June 16th with programs and silent auctions. There will be special shells as door prizes for each program. Wednesday evening is our Welcome Party. Since we are on the Space Coast, we ask attendees to dress as their favorite astronaut, favorite space character, or favorite space creature. The best in each category will get a space related prize. The sky is not even the limit for your imagination of costumes.

Thursday continues with silent auctions, programs, and door prizes. Thursday night is the premier COA oral auction of spectacular and rare shell items. We are still looking for donations of premium items for the auction, which is one of the primary funding sources for COA. Contact Dave Green, Oral Auction Chair, at dgreen2@entouch.net Friday continues with programs and meetings, including the COA business meeting. That evening is the COA banquet with a guest speaker from the space program.

The world famous COA Bourse with premier shell dealers is on Saturday (1pm-8pm) and Sunday (9am-2pm). We also have the COA raffles that include a spectacular 18-inch diameter Sailor's Valentine made by a COA member. It comes with a detachable 26-inch stand.

Our hotel is the Hilton Rialto in Melbourne, with a room rate of $125 per night. Junior suites are available for $145. All rooms have refrigerators, in-room safe, and free wi-fi. The hotel offers a pool, hot tub, tennis courts, and an indoor exercise gym. ALL events (except of course for field trips) are located on the first floor of the hotel with easy access to all of the meeting events.

COA has weathered interesting challenges with conventions. Our second convention was scheduled on a cruise ship that blew up before the convention. The first convention planned for Key West was interrupted by a hurricane. These conventions did go on and the attendees had a great time. We know you will have a great time at the Sheller's Family Reunion to meet and celebrate at the only national shell convention that will be held in the U.S. this year.

This convention is a go! Masks and sanitizer will be provided and the convention will be conducted under the most current CDC guidelines. Check the COA website for updated information (conchologistsofamerica.org)

Alan Gettleman
lychee@cfl.rr.com

Left column and above: the Hilton Rialto experience with nearby beaches and spacious hotel accommodations both inside and outside.

Located on the top two floors of the Dinosaur Store, in Cocoa Beach, the 20,000 sq ft Museum of Dinosaurs and Ancient Cultures showcases hundreds of authentic artifacts and fossils from around the world. Museum pricing: Adult - $14, Senior - $12, Child - $10.

The Old Sheller and Conchylomania

Sam Harris

correspondent

(reprinted with permission from *The Virginian-Pilot*, Friday, October 2, 2020)

Conchologists are not to be confused with seashell collectors. There's the science of shells and then there's putting seashells in the microwave until it blows the creature clean out of their homes.

Yet we all collect something: beanie babies, nostalgic postcards, locks of hair from exes, Christmast tchotchkes, souvenir spoons, cats. Some of us cover our walls with Coca-Cola signs and vintage glass bottles as a tribute to better times; a few bring home travel souvenirs to remember beautiful places and family trips; others hoard magazines and paper ephemera to maintain a deeper connection to someone no longer around.

But to stumble down the rabbit hole of a seashell collector's secrets is to realize there is so much more to those mollusks that wash ashore under our chairs.

It's difficult to imagine that conchylomania once ripped through continents in the same fad-like way as The Beatles invasion took over America, but the myths and legends that originate from a madness that overtook European shell collectors starting in the early 17th century onward are so tantalizing, they give ol' King James a run for his money.

Collectors have stolen, lied, betrayed and paid more money than any other earthly delights. A certain sheller was known for paying three times more for a cowrie shell than the $100 million Vermeer painting he also owned. Another, possessing the rarest of seashells, was made legend by bidding top dollar for the exact same species only to win and crush it to bits on stage, making sure to be the sole proprietor of the exquisite univalve.

They have been pickpocketed from history museums, dredged up from the depths of the ocean, traded online, and simply picked from the tidal lines across every beach in every country. But with a stiff cocktail in hand and the soulful sounds of a conch shell trumpet echoing through breaking waves, we begin to understand the mysteries and allure of owning such a prized possession.

If there's a drink strong enough to provide a glimpse into the world of the extraordinary love these beautiful mollusks created for their doting admirers, this is it.

The Old Sheller

2 ounces bourbon
1 ounce Gardenia mix*
1/2 ounce tangerine juice
Dash Angostura bitters
Brandied cherry

Add all to blender and top over with ice, blend and serve with a bouquet of mint and brandied cherry.

*Gardenia mix: This is our quick take on the classic. Add 1 ounce of room-temperature butter to 1 ounce of honey and a generous teaspoon of Trader Vic's Macadamia Nut Liqueur to a blender and blend to a cream. Stores for a week in the fridge so you might want to make more.

American CONCHOLOGIST
Calendar membership (Jan - Dec) = $25 (USA)
Postal surcharges: + $5 for USA first class,
Canada & Mexico + $5, other nations + $15
New members apply to: Linda Powers
2700 N. Beach Rd. Unit D106
Englewood, FL 34223-9223
linda.powers1@gmail.com
Quarterly Journal of the Conchologists of America, Inc.

Shells Needed for the Oral Auction in Melbourne, Florida

Dave Green
Oral Auction Chairman

We are already into the first quarter of 2021 and the second attempt at a COA Convention in Melbourne, Florida, will be here in a very short time. As Oral Auction Chairman for this year's convention, I am reaching out to you requesting generous donations of shells for the oral auction in June.

We have received a few very nice donations since the 2019 COA Convention on Captiva Island, but we are really hurting for quality shells to meet my goal of 100+ auction lots that can be used in the oral auction. In talking with John and Cheryl Jacobs, it seems we are on track for several quality silent auctions during the convention, but the oral auction donations have been lacking in number and quality.

As you are aware, COA has been blessed during the last three years by receiving several large and outstanding shell collections as donations to the organization. As of this time, all of those donated items have been used and we are back to our old way of seeking donations of shells from our members and our faithful dealers. The last few years have been fun and exciting but the good times are gone for now and it is time to go back to work if we are to meet our commitments to our educational grant program.

Please examine your collections and see what items might be donated to COA for the oral auction. I would like to receive your donations by Wednesday, April 15, if possible, as it takes a considerable amount of time and effort to get the auction ready for presentation at the convention.

Please do not forget the Thursday, April 15, 2020 deadline for receiving donations.

Please ship your donations to: Dave Green, Oral Auction Chairman, 3522 Bassett Court, Missouri City, Texas 77459 USA.

If you have questions or comments, please email me at dgreen2@entouch.net or call me at 713-435-9971. I read emails several times daily and I have my cell phone with me most of the time.

As always, I sincerely appreciate all the support each and everyone has given to the oral auction all these past years and I hope you will continue that support for COA 2021 in Melbourne. COA will certainly welcome your donations. I look forward to seeing all our members in Melbourne, Florida, in June.

2019 COA Auctioneers, Hank Chaney (left) and Paul Callomon (right), are prepared for 2021 with levity and a touch of sarcasm.

2021 shell shows and related events

The following information is subject to change. Due to the uncertainties with Covid 19, please verify with the individual organization. Also, please check the **COA Web page** for events/updates: conchologistsofamerica.org

January 2021 *Cancelled*
56th Annual Broward Shell Show, Pompano Beach, FL
Emma Lou Olson Civic Center, 1801 Northeast 6th Street
Alice Pace Email: alicepace90@att.net
Tel: 305-301-1296
Website: browardshellclub.org

January 2021 *Cancelled*
41st Space Coast Seashell Festival/Show, Melbourne, FL (Astronaut Trail Shell Club)
Eau Gallie Civic Center, 1515 Highland Avenue
Alan Gettleman Email: lychee@cfl.rr.com
Tel: 321-536-2896
Website: spacecoastseashells.com

February 2021 *Cancelled*
58th Annual Sarasota Shell Show, Sarasota, FL
Potter Building at Robarts Arena, 2896 Ringling Blvd., Sarasota, FL
Donna Cassin Email: dcassin9411@verizon.net
Tel: 941-362-3302
Website: sarasotashellclub.com

February 2021 *Cancelled*
74th St. Petersburg Shell Show, Seminole, FL
Seminole Recreation Center, 9100 113th St. N
John Jacobs
Email: johncheryl@earthlink.net Tel: 813-309-2608
Website: stpeteshellclub.org

February 2021 *Cancelled*
Florida United Malacologists 11th Annual Meeting
Florida Marine and Wildlife Research Institute
Steve Geiger
Email: Steve.Geiger@myfwc.com

March 2021 *Cancelled* (Virtual)
84th Sanibel Shell Show, Sanibel, FL
Sanibel Community Center, 2173 Periwinkle Way
Sanibel Island, Florida 33597
Joyce Matthys: email: joycematthys1@gmail.com
Tel: 503-871-1082
Mary Burton: email: marybsanibel@hotmail.com
Tel: 561-301-2971
Website: sanibelshellclub.com

March 11-13, 2021 *Cancelled*
40th Marco Island Shell Show, Marco Island, FL
United Church of Marco Island, 320 North Barfield
Contact: Jae Kellogg
Email: pjsailkw@gmail.com Tel: 239-253-8483
Website: marcoshellclub.com

April 16-18, 2021
15th Australian National Shell Show
Gaythorne Bowls Club
18 Prospect Road, Gaythorne 4051
Queensland, Australia
Email: brisbaneshellclub@powerup.com.au
Website: https://www.seqshells.com/nationalshellshow2021/
Post: PO Box 78, Arana Hills, QLD 4054 Australia
Facebook: https://www.facebook.com/groups/1434389403526873

April 17-18, 2021
Paris International Shell Show
Centre Culturel, Place des Martyrs de Chateaubriant, 77500 Chelles (20 km de Paris)
Website: www.xenophora.org

April 24, 2021
British Shell Collector's Club Convention
Theydon Bois Village Hall, Theydon Bois, Essex
CM 16 7ER Coppice Row (the B172)
Contact: Debbie Rolfe Tel: 44-01474-567827
Email: debzr58@gmail.com Website: britishshellclub.org

May 15-16, 2021
30th Belgium International Shell Show
Sporthal Kattenbroek, Kattenbroek 14
2650 Edegem, Belgium
Charles Krijnen, Burgemeester Jansenstraat 10,
NL-5037 NC Tilburg, Nederland
Email: bvc.shellshow@planet.nl Tel: 31(13)463-0607
Website: www.knobvc.be/shellshow.php

May 21-23, 2021 *Cancelled*
North Carolina Shell Show
Coastline Convention and Event Center
501 Nutt Street, Wilmington, NC 28401
John Timmerman; Email: ncshellclub@gmail.com
Karlynn Morgan; Email: karlynnmorgan@earthlink.net
Website: www.ncshellclub.com

June 14-20, 2021
Conchologists of America Annual Convention, Melbourne, FL
Hilton Melbourne, 200 Rialto Place, Melbourne, FL www.HiltonMelbourne.com
Registration: Marsha Kirtley Email: MarshaK07@gmail.com
Co-Chairs: Alan Gettleman Email: lychee@cfl.rr.com
Phyllis Gray Email: phyllisgray98@gmail.com
Website: conchologistsofamerica.com

July 2-4, 2021
Townsville Shell Show
Orchid Society Hall in Charles Street, Kirwan
Townsville, Queensland, Australia
Contact: Jack Worsfold Email: jnw_48@yahoo.com.au

August 21-22, 2021
Annual West Coast Shell Show, San Diego, CA
Casa Del Prado, Room 101, Balboa Park
Contacts: David Waller Email: dwaller@dbwipmg.com
Tel: 858-768-1864
David Berschauer Email: shellcollection@hotmail.com
Tel: 949-457-9210
Website: sandiegoshellclub.com and Facebook

August 27-September 6, 2021
Oregon Shell Show
Oregon State Fair & Exposition Center
2330 17th St., NE, Salem, OR 97301
Marici Reid: Tel: 408-891-5643
Email: marici@earthlink.net

October 15-17, 2021
Sea Shell Searchers Shell Show AND 2021 Texas Shellers' Jamboree
Lake Jackson Civic Center, 333 Hwy 332, Lake Jackson, TX
Shell Show Contacts: Wanda Coker; Tel: 979-236-5274,
Email: emptybobbin51@yahoo.com
Patty Humbird: Tel: 979-373-1247
Email: phumbird@earthlink.net
Jamboree Contacts: Lucy Clampit; Tel: 713-468-0610
Email: lclampit@comcast.net
Houston Conchology Society: houstonshellclub.com

October 23, 2021
41st Annual Sydney Shell Show
Ryde Eastwood Leagues Club, Ryedale Room,
117 Ryedale Road, West Ryde, Sydney, Australia.
Contact: Steve Dean Tel: 0411751185
Email: steve@easy.com.au

*Information Source: **Vicky Wall,** COA Awards Director, 303 Wall Road, Mayodan, NC 27027, USA E-mail: vwallsheller@gmail.com Tel: 336-348-3260

I was recently asked, "Aside from the magazine, what does COA do for me?" A slight butchering of a JFK quote comes to mind, but instead, let me share a few thoughts. **First**, there is "the magazine," the COA quarterly journal, *American Conchologist*, containing a mix of subject matter related to conchology, from the scientific to the amateur hobbyist level. Our journal provides a platform for the furtherance of molluscan research as well as ongoing discussion and education in molluscan matters. **Second**, COA provides approximately $25,000 in annual grant money for molluscan research. That is no small achievement and it is thanks to our COA members and associated shell clubs that 10 to 20 researchers get a monetary boon every year. **Third**, COA provides a continuance and extension of local shell clubs by reporting on shell shows and certain club activities in the journal as well as a COA sponsored chance to cross-talk among different shell clubs and compare notes during the annual shell club representative breakfast and meeting at each convention. **Fourth**, COA provides, at no cost to local clubs, the COA Award for presentation at shell shows – worldwide. **Fifth**, COA sponsors the *Neptunea* Award to recognize "...outstanding and distinguished service to conchologists and malacologists..." and the biennial Lifetime Achievement Award. **Sixth**, COA sponsors an extensive web site at <conchologistsofamerica.org> with educational articles, links, updates on COA activities, and a COA contact for general questions and information about COA. **Seventh**, Conch-L, is an online forum moderated by COA member volunteers and administered by the University of Georgia. Here questions about any aspect of conchology and issues pertaining to molluscan studies can be aired, discussed, and often resolved. **Eighth**, COA sponsors (usually through local shell clubs) an annual convention – a time to bump elbows with fellow enthusiasts as well as enjoy a series of shell-related presentations, silent auctions, field trips, a banquet with associated speaker, and an oral auction. Not enough? How about the COA bourse? **Ninth**, 12,000 to 15,000 square feet or more of bourse, with 30 or 40 shell dealers from around the world. Every member who has attended a convention remembers walking into their first bourse – it is, in the words of an eight-year-old I happened to overhear, a "wondrous experience." That bourse is for you, the COA member, as are the four annual issues of *American Conchologist*, the various awards, the web site, Conch-L, the convention (with associated dinner, presentations, and auctions), and the satisfaction of helping further molluscan research every year. So step up. Annual dues are less than an average trip to McDonald's. Yes, convention registration and associated hotel and travel costs are not cheap, but we do move the event around the country, contract for the best available rates, and, I believe, give top value for the money you spend. Still too much? Plan for every other year or every third year. Finally, a heart-felt thank you to all COA volunteers, from the COA Board, to the individual collector who donates a shell collection to help further COA initiatives, to the countless folks who make each convention and COA activity possible. Most are unsung and behind the scenes, but their time and money make COA possible.

Tom Eichhorst

J. B. Sessoms – in memoriam:

On the last day of January the shelling community bade farewell to Junius Bradley "J. B." Sessoms III, a mainstay of the Philadelphia Shell Club for over fifty years. J. B. was a true polymath who combined a solid knowledge of science with great creativity to build a significant collection and a long series of memorable shell exhibits.

A former lifeguard and a veteran of the Navy, J. B.'s energy, organizational skills, and practical approach were also reflected in his various successful retail businesses in Sea Isle City. He was an enthusiastic sheller from childhood and joined the Philadelphia Shell Club at fifteen, in 1959, making him its longest-standing local member as we entered 2021. As the club grew in the 1960s and 70s, J. B. regularly presented programs that drew on his remarkable knowledge of the Mollusca.

Gary Rosenberg recalls:

I remember how J. B. would pull together vignettes about various species and topics for his presentations to the club. He'd distribute photocopies, always on legal size paper, with selections from Fretter & Graham's British Prosobranch Mollusks and other sources. My favorite memory was when he had us all stand up in the central aisle and raise our arms over our heads. Then he tossed a cardboard box to the first person in line and said "pass it back overhead—that's how cilia work".

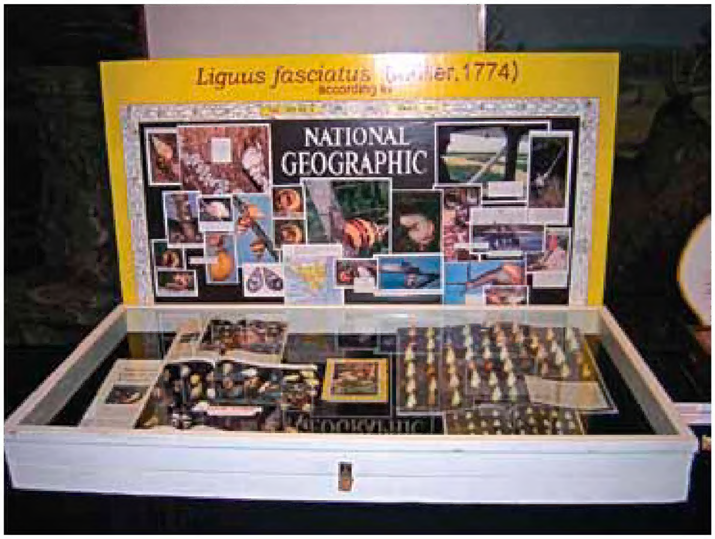
In the heyday of the Philadelphia Shell Show, J. B. was the chief to whom everyone else reported. An exhibitor from the beginning, he also took on the roles of exhibits chair, lighting engineer, supervisor of judging, and general manager. Even as the show grew in scale and ambition, he kept a steady hand on it, ensuring that each exhibit was properly classified and placed to its best advantage and traveling up from his home on the Jersey shore for three straight days with bags of excellent chocolate to supervise the entire thing in person.

Rich Kirk recalls:

J. B. was always a pillar of the club. He gave many informative lectures at the meetings, served as its President for at least two stretches, and was the very bedrock of the Philadelphia Shell Show for 35 years. When he exhibited, his exhibits were eye-popping gorgeous but also unusually informative and educational, blending his surprising skills in science and fine design. His underpinning of the show itself was crucial. He provided the layout every year and set up the difficult lighting, and through it all he saw it rise to among the best in the nation for many years. He so enjoyed the club, the people, the shells, the activities and the good food, and he participated fully in all of it.

Former show chair Paul Callomon remembers JB fondly:

You could not tell JB anything, but that was mostly because he was right. His measured pace, ambivalence towards digital technologies, and liberal attitude to deadlines were things I gradually learned to appreciate as much as his great energy, attention to detail, and dry wit. We certainly would not have had that solid run of great shows without him; time and again I would be summoned on the radio to the scene of some problem only to have the exhibitor look over my shoulder and ask "where's J. B.?"

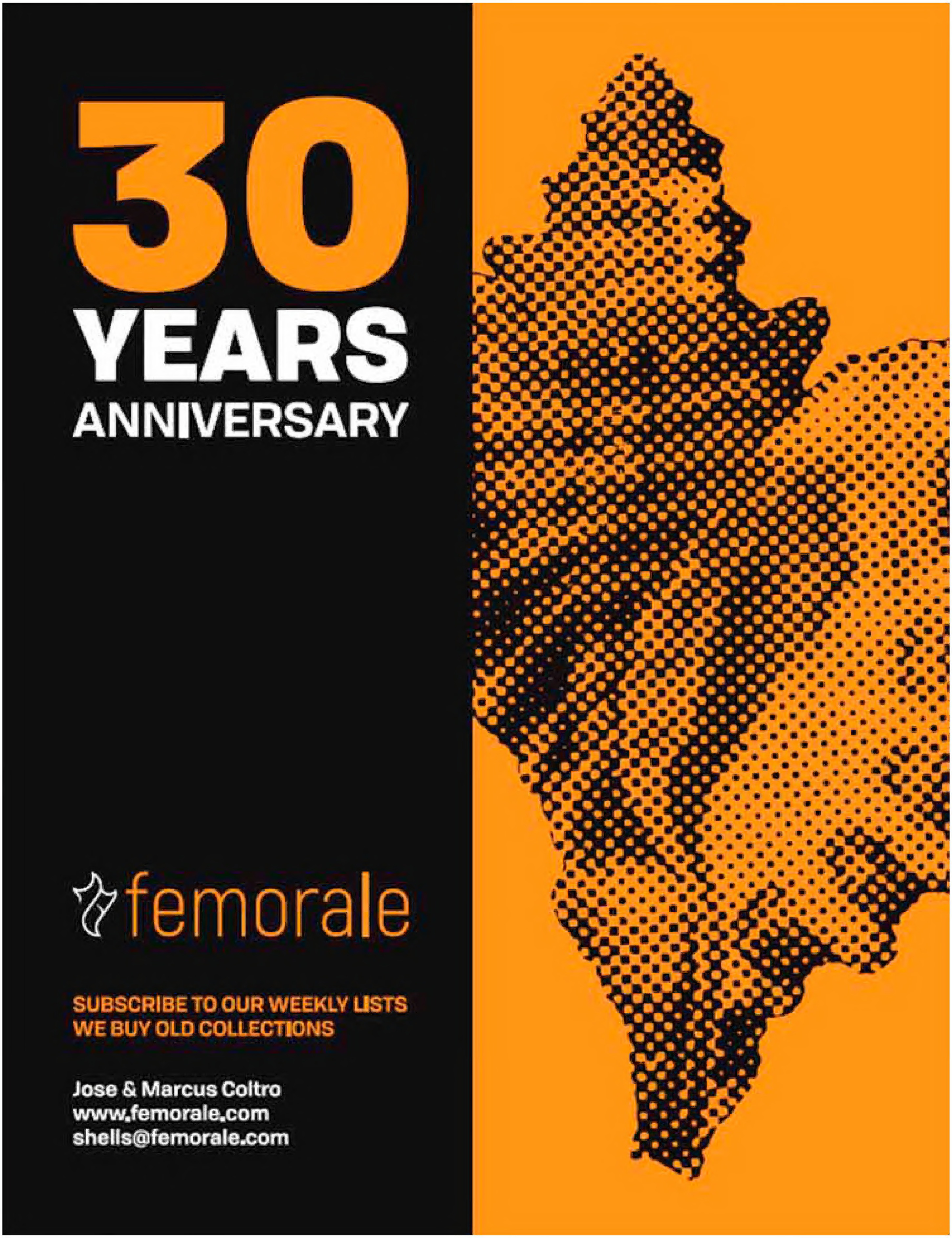


J. B.'s spectacular exhibit replicating the *National Geographic* feature on *Liguus* tree snails using real shells. It was created in collaboration with Roberta, his wife of 52 years.

J. B. as many remember him – up a ladder hanging lights at the Philadelphia Shell Show.

In this digital era the great post-war Golden Age of shell clubs and shows may be behind us, but J. B. Sessoms epitomized the enthusiastic and productive community of collectors and scientists it fostered.

Philadelphia Shell Club



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